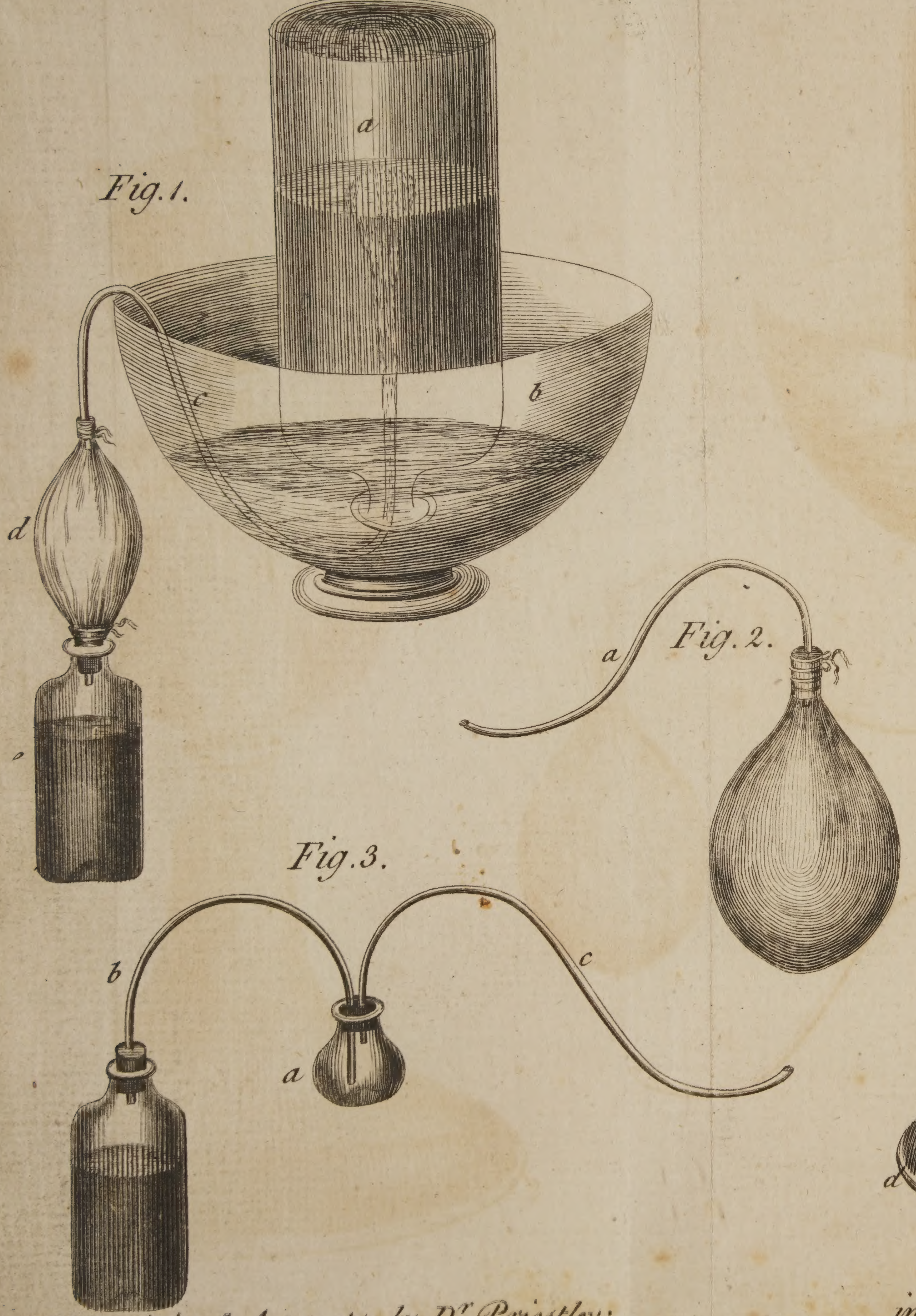
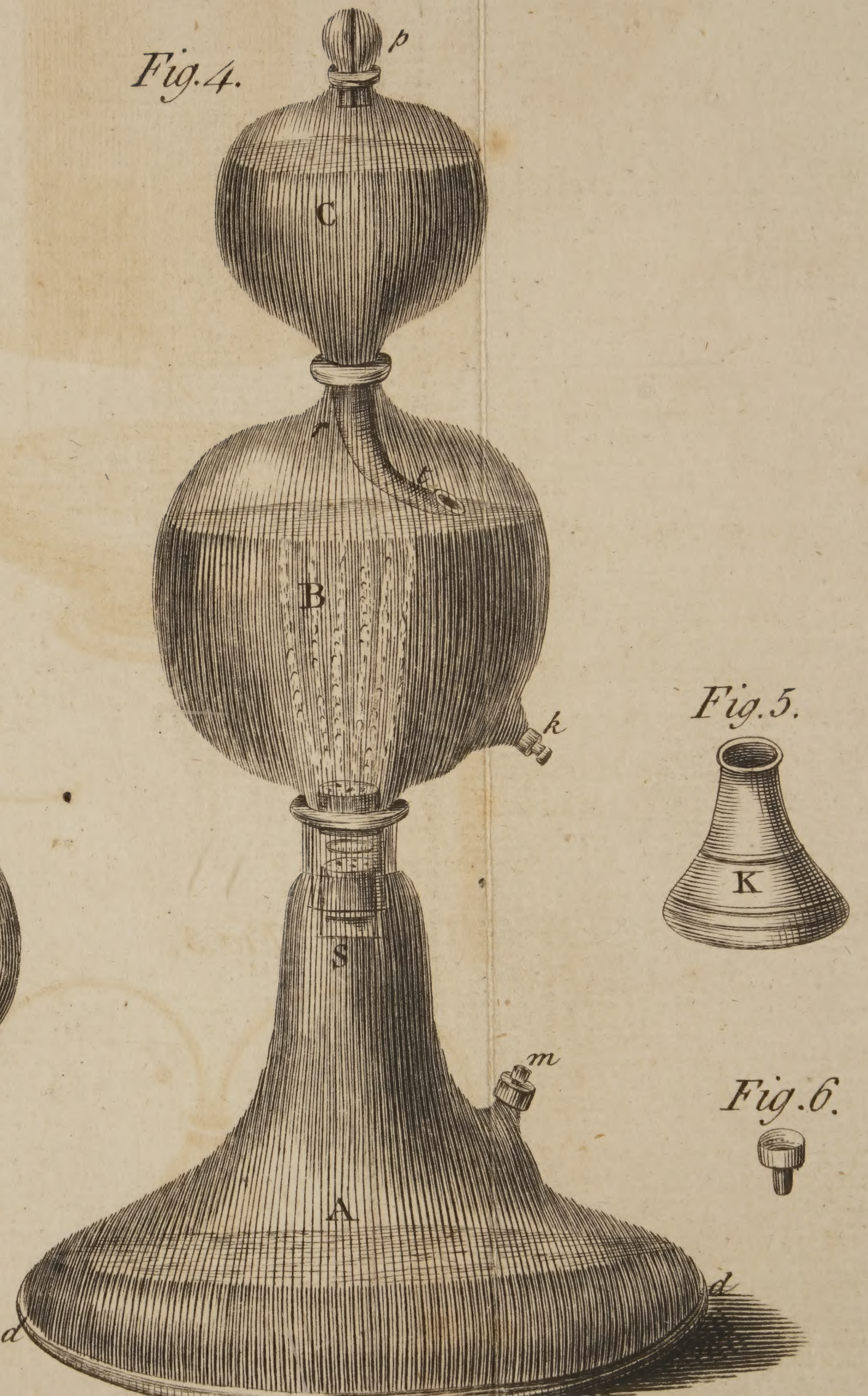
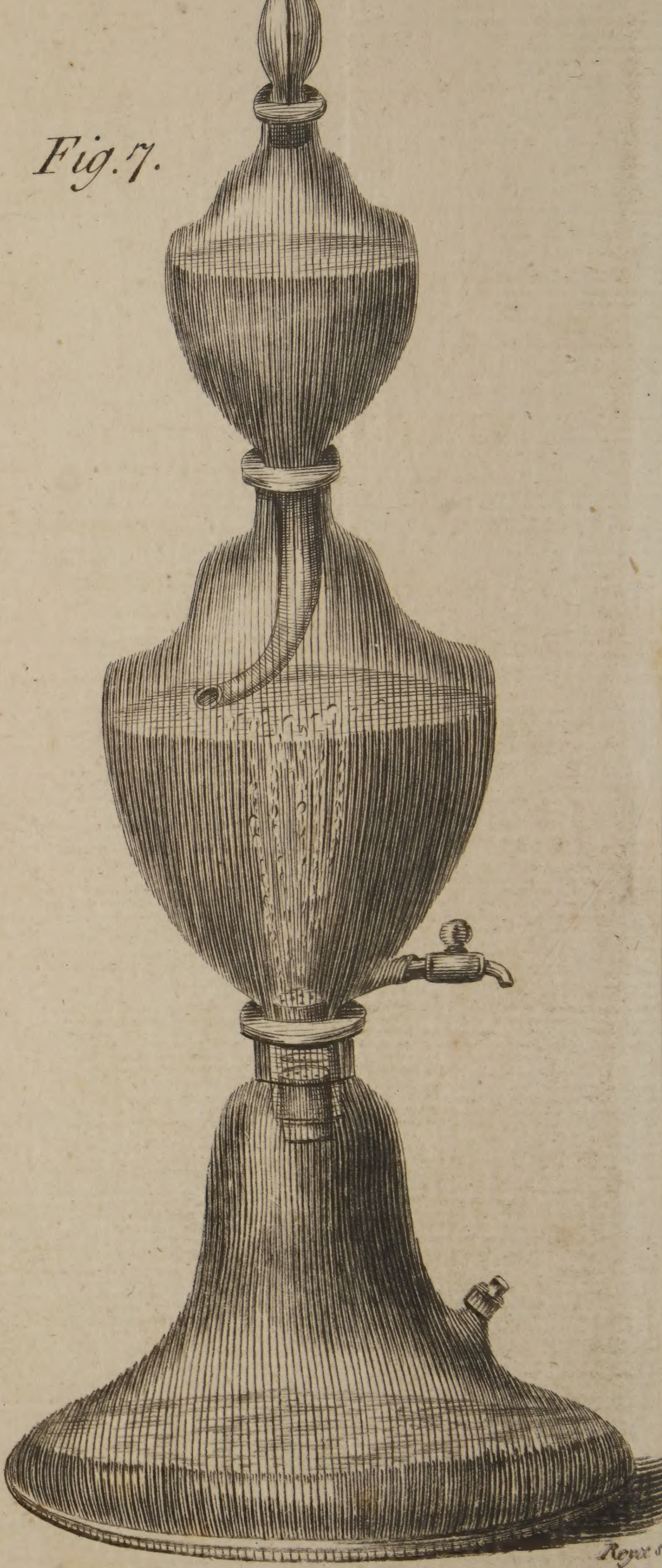


The Original Apparatus by Dr. Priestley:



improved by Dr. Nooth, Mr. Magellan, & Mr. Parker:



further improved by Mr. Blades.

S4799

AN ACCOUNT OF THE NATURE AND MEDICINAL VIRTUES OF THE Principal Mineral Waters OF GREAT BRITAIN AND IRELAND, AND THOSE MOST IN REPUTE ON THE CONTINENT.

TO WHICH ARE PREFIXED,

Directions for IMPREGNATING WATER with FIXED AIR, in order to communicate to it the peculiar Virtues of PYRMONT WATER, and other MINERAL WATERS of a ſimilar Nature. Extracted from Dr. PRIESTLEY'S EXPERIMENTS ON AIR.

WITH AN APPENDIX,

Containing a Deſcription of Dr. NOOTH'S Apparatus, with the IMPROVEMENTS made in it by others. And a Method of IMPREGNATING WATER with SULPHUREOUS AIR, ſo as to imitate the AIX-LA-CHAPELLE and other SULPHUREOUS WATERS.

By JOHN ELLIOT, M.D.

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Dr. Priestley's Pamphlet on the Impregnation of Water with Fixed Air being out of print, and that Gentleman having no intention of republiſhing it, I have judged proper to prefix it to the following Tract, with the additions as printed in his ſecond Volume of Experiments on Air. This was done as well that the reader might be entertained with the hiſtory of this diſcovery, as inſtructed in an eaſy method of making the impregnation when Dr. Nooth's apparatus might not be at hand.

Newman Street, Aug. 30, 1781. J. E.

N. B. In the introduction to the alphabetical liſt of mineral waters, thoſe of Bath, Matlock, and Chaude-Fontaine, are, after the example of preceding writers, ſet down among the ſulphureous waters; but they ought rather to be claſſed with the waters impregnated with fixed air. The term *calcareous Glauber's ſalt*, is alſo uſed in one or two places, from the ſame authors, though it is not ſtrictly proper; modern chemiſtry having diſcovered that the baſis of that ſalt is not *calcareous earth*, but *magneſia*.

ERRATA.

Page 76, line 6 and 7, dele *Bath* and *Matlock.*
79. l. 13, dele *calcareous Glauber's.*

Errata of leſs conſequence the reader will eaſily correct.

OF THE
IMPREGNATION OF WATER
WITH
FIXED AIR.

CHAPTER I.

The Hiſtory of the Diſcovery.

IT often amuſes me when I review the hiſtory of experimental philoſophy, to obſerve how very nearly one diſcovery is connected with another, and yet that, for a long time, no perſon ſhall have perceived that connection, ſo as to have been actually led from the one to the other; and eſpecially that he who made the firſt diſcovery ſhould ſtop ſhort in his progreſs, and not advance a ſingle ſtep farther, to make the other, which was perhaps of infinitely more conſequence. And yet the caſe may be ſuch, that it ſhall be ſo far from requiring more genius, or ingenuity, to advance that other ſtep, that it is rather a matter of wonder, how it was poſſible for the moſt common capacity to ſtop ſhort of it. We alſo frequently find that they who make the moſt important philoſophical diſcoveries overlook the moſt obvious *uſes* of them. Several ſtriking examples of this kind will be found in my *Hiſtory of electricity*, and alſo in the *Hiſtory of diſcoveries relating to viſion, light, and colours.*

In ſuch caſes as theſe it behoves an hiſtorian to be much on his guard, leſt he ſhould haſtily conclude that to have been fact which he only *imagines* muſt have been ſo, but for which no direct evidence can be produced. As this is a caſe of ſome curioſity reſpecting the human mind, I ſhall give an inſtance of it; and I am able to produce a very remarkable one relating to the ſubject of this ſection.

When it was diſcovered that the acidulous taſte and peculiar virtues of Pyrmont water, and other mineral waters of a ſimilar nature, were owing to the fixed air which they contained; when this air had been actually expelled from the water, and it was found that the ſame water, and even other water, would reimbibe the ſame air; we are apt to conclude that the perſon who made theſe diſcoveries, and eſpecially the laſt of them (who alſo muſt have known that fixed air is a thing very eaſy to be procured) muſt have immediately gone to work to reduce this *theory* into *practice*, by actually impregnating common water with fixed air, in order to give it the peculiar virtues of thoſe medicinal mineral waters which are ſo highly, and ſo juſtly valued, and which are procured at ſo great an expence, eſpecially in this country. Accordingly, Dr. Nooth has advanced, Phil. Tranſ. vol. 65, p. 59, that "the poſſibility of "impregnating water with fixed air was no "ſooner aſcertained by experiment, than "various methods were contrived to effect "the impregnation;" and I doubt not this ingenious philoſopher impoſed upon himſelf in the manner deſcribed above. This, however, is ſo far from being the caſe, that I do not believe it is poſſible to produce the leaſt evidence that any perſon had the thing in view before the publication of my pamphlet upon that ſubject, in the year 1772.

Indeed had this thing been ſo much as *an object of attention* to philoſophers, it is impoſſible but that ſome of them muſt have hit upon a method that would have ſufficiently ſucceeded. Nay, the thing is ſo very eaſy, and the end attainable in ſo many ways, that there muſt have been, in a very ſhort time, a great variety of methods to impregnate water with fixed air, as there are now; and we ſhould certainly have heard of *artificial mineral waters* being made according to them. It is impoſſible not to conclude ſo, when we conſider the *time that has elapſed* ſince the publication of all the diſcoveries that led to it.

Dr. Brownrigg's paper, giving an account of his diſcovery of fixed air in the Spa water, was read at the Royal Society June the 13th 1765, and was publiſhed in 1766. This excellent philoſopher compleatly decompoſed that mineral water, but he gives no hint of his having ſo much as attempted to *recompoſe* it, or of making a ſimilar water, by impregnating common water with the ſame volatile principle. It is ſufficiently evident that he had not thought of this, though we may wonder that he ſhould not have done it, becauſe he has not mentioned it, as an object of purſuit.

In the year following, Mr. Cavendiſh's valuable papers on the ſubject of factitious air were publiſhed. He firſt aſcertained how much fixed air a given quantity of water could be made to imbibe; yet it does not appear that he ever thought of *taſting* the water, much leſs that he thought of making any *practical uſe* of his diſcovery.

If any negative argument can be deciſive, it is that in 1772, the very year in which my pamphlet came out, Dr. Falconer publiſhed his excellent and elaborate treatiſe on the *Bath waters*, in which he treats very largely of mineral waters in general, and all their poſſible impregnations; and yet, though he treats of *fixed air* as one ingredient in many of them, ſee p. 185, he drops no hint about compoſing ſuch water, by imparting fixed air to common water. Alſo on the 12th of September in the ſame year, Dr. Rutherford publiſhed his ingenious *Diſſertation on Fixed Air*, in which he ſpeaks of the preſence of it in Pyrmont water, p. 3, but without giving the leaſt hint of his being acquainted with any method of imitating them. And yet Dr. Nooth ſays, in fact, that from the year 1766, at the lateſt, *various methods* were contrived to effect the impregnation, though he allows that I was the only perſon who "publiſhed any deſcription "of an apparatus calculated entirely for "this purpoſe."

According to this account of the matter there were, in the interval between 1766 and 1772, a ſpace of ſix years, a variety of methods for impregnating water with fixed air, ſome of them prior to, and perhaps much better than mine (though he gives no hint of his own having been invented in that period, but ſpeaks of it as ſuggeſted by the conſideration of the imperfection of mine) but that I happened to get the ſtart in the publication. Dr. Falconer, however, though the friend of Dr. Nooth (ſee his treatiſe on Bath Water, vol. 2. p. 323) had certainly never heard of any of thoſe methods, or even of mine, at the very termination of that period; and though my own acquaintance with philoſophical and medical people is pretty extenſive, I never heard of any of the *various methods* that Dr. Nooth ſpeaks of; nor ſince the publication of my method have I heard of any perſon whatever having pretended to have done the ſame thing before; though nothing is more common than ſuch claims, and very often on the moſt trifling pretences.

Mr. Venelle, indeed, immediately upon the tranſlation of my pamphlet into French, which was within a few weeks after the publication of it in Engliſh (owing to the laudable zeal of Mr. Trudaine, for promoting all philoſophical and uſeful improvements) publiſhed an extract of his papers from the *Memoires de Mathematique & de Phyſique*, to vindicate to himſelf not my diſcovery, but, in fact, that of Dr. Brownrigg. However, what he pretends to have diſcovered was, that the virtues of the acidulous waters were owing to *air, in general*, without having any idea of the difference between fixed air and common air; ſo that his diſcovery was ſo far from being the ſame with mine, that it could not poſſibly have led into it.

As I have hitherto only publiſhed the method of impregnating water with fixed air in a ſmall pamphlet, for the uſe of thoſe who might chuſe to reduce it into practice, without giving any account of the manner in which the diſcovery (if it deſerves to be called one) was made, which has been my cuſtom with reſpect to every thing elſe, I ſhall do it here; and I hope the narrative will not be altogether diſpleaſing, as this buſineſs has gained ſo much attention in all parts of Europe, as well as in England, and promiſes in a ſhort time to ſave the very great expence of tranſporting acidulous waters to conſiderable diſtances, by ſuperſeding, in a great meaſure, the uſe of them. And though what I have done in this buſineſs has certainly the leaſt merit poſſible with reſpect to *ingenuity*, I ſhall always conſider it as one of the *happieſt* thoughts that ever occurred to me; becauſe it has proved to be of very ſignal *benefit* to mankind, and will, I doubt not, be of much more conſequence in a courſe of time.

It was a little after Midſummer in 1767, that I removed from Warrington to Leeds;

and living, for the firſt year, in a houſe that was contiguous to a large common brewery, ſo good an opportunity produced in me an inclination to make ſome experiments on the fixed air that was conſtantly produced in it. Had it not been for this circumſtance, I ſhould, probably, never have attended to the ſubject of air at all. Happening to have read Dr. Brownrigg's excellent paper on the Spa water about the ſame time, one of the firſt things that I did in this brewery was to place ſhallow veſſels of water within the region of fixed air, on the ſurface of the fermenting veſſels; and having left them all night, I generally found, the next morning, that the water had acquired a very ſenſible and pleaſant impregnation; and it was with peculiar ſatisfaction that I firſt drank of this water, which I believe was the firſt of its kind that had ever been taſted by man.

This proceſs, however, was very ſlow. But after ſome time it occurred to me, that the impregnation might be accelerated, by pouring the water from one veſſel into another, while they were both held within the ſphere of the fixed air; and accordingly I found that I could do as much in about five minutes in this way, as I had been able to do in many hours before. Several of my friends who viſited me while I lived in that houſe will remember my taking them into that brewery, and giving them a glaſs of this artificial Pyrmont water, made in their preſence. Among others, I will take the liberty to mention John Lee, Eſq; of Lincoln's Inn, who was particularly ſtruck with the contrivance, and the effect of it. This was in the ſummer of the year 1768.

One would naturally think, that having actually impregnated common water with fixed air, produced in a brewery, I ſhould immediately have ſet about doing the ſame thing with air ſet looſe from chalk, &c. by ſome of the ſtronger acids; and I do remember that it did occur to me that the thing was poſſible. But, eaſy as the practice proved to be, no method of doing it at that time occurred to me. I ſtill continued to make my Pyrmont water in the manner abovementioned 'till I left that ſituation, which was about the end of the ſummer 1768; and from that time, being engaged in other ſimilar purſuits, with the reſult of which the public are acquainted, I made no more of the Pyrmont water 'till the ſpring of the year 1772.

In the mean time I had acquainted all my friends with what I had done, and frequently expreſſed my wiſhes that perſons who had the care of large *diſtilleries* (where I was told that fermentation was much ſtronger than in common breweries) would contrive to have veſſels of water ſuſpended within the fixed air, which they produced; with a farther contrivance for agitating the ſurface of the water; as I did not doubt but that, by this means, they might, with little or no expence, make great quantities of Pyrmont water; by which they might at the ſame time both ſerve the Public, and benefit themſelves. For I never had the moſt diſtant thought of making any advantage of the ſcheme myſelf.

In all this time, viz. from 1767 to 1772, I never heard of any method of impregnating water with fixed air but that abovementioned. My thinking at all of reducing to practice any method of effecting this, by air diſlodged from chalk, and other calcareous ſubſtances, was owing to a mere accident. Being at dinner with the Duke of Northumberland, in the ſpring of the year laſt mentioned, his Grace produced a bottle of water diſtilled by Dr. Irving for the uſe of the navy. This water was perfectly ſweet, but, like all diſtilled water, wanted the briſkneſs and ſpirit of freſh ſpring water; when it immediately occurred to me that I could eaſily mend that water for the uſe of the navy, and perhaps ſupply them with an eaſy and cheap method of preventing or curing the ſea ſcurvy, viz. by impregnating it with fixed air. For having been buſy about a year before with my experiments on air, in the courſe of which I had aſcertained the proportional quantity of ſeveral kinds of air that given quantities of water would take up, I was at no loſs for the *method* of doing it in general, viz. inverting a jar filled with water, and conveying air into it from bladders previouſly filled with air. This ſcheme I immediately mentioned to the Duke and the company, who all ſeemed to be much pleaſed with it, and expreſſed their wiſhes that I would attend to it, and endeavour to reduce it into practice; which I promiſed to do.

The next day I provided a ſmall apparatus, adapted to this purpoſe, at my lodgings, which was very eaſy, as it required no other veſſels but ſuch as are in conſtant family uſe, and with this I preſently impregnated a quantity of the New River water, ſo as to make it imbibe about its bulk of air. But I was far from having hit upon the *eaſieſt method* of doing it; for my jars were of an equal width throughout. However, with theſe veſſels the proceſs was compleated in about twenty minutes, or half an hour.

A few days after this, having an invitation to wait upon Sir George Savile, I carried with me a bottle of my impregnated water, and told him the uſe that might be made of it, viz. that of ſupplying a pleaſant and wholeſome beverage for ſeamen, and ſuch as might probably prevent or cure the ſea-ſcurvy. Sir George, with that warmth with which he eſpouſes every thing that he conceives to be for the public good, inſiſted upon writing a card immediately to Lord Sandwich, propoſing to introduce me to him, as having *a propoſal for the uſe of the navy*. As I could make no objection, the card was accordingly written,

ten, and an anſwer was preſently returned from his Lordſhip, informing us that he would be glad to ſee us the next day. Upon this I drew up ſomething in the form of a *propoſal*, which, accompanied by Sir George, I preſented to his Lordſhip, who promiſed to lay it before the Board of Admiralty.

Preſently after this I had notice from the Secretary to the Board of Admiralty, that the *College of Phyſicians* were appointed to examine my propoſal, and to make their report of it to the Board, and an early day was fixed for me to wait upon them at their hall in Warwick-Lane; where, before a very full meeting, I produced a bottle of my impregnated water, and alſo, at their requeſt, fetched my apparatus, and ſhewed them the manner in which I had impregnated it. There were preſent ſeveral of the moſt eminent phyſicians in London; but both the *ſcheme*, and the *object* of it, appeared to be entirely new to every one of them; and moſt of them ſeemed to be much pleaſed with it.

Accordingly, a favourable report was made to the Board of Admiralty, and I was acquainted by the Secretary, that the Captains of the two ſhips which were juſt then ſailing for the South-Seas had orders to make a trial of the impregnated water; and for their uſe I drew out my *Directions* in writing, and ſent a drawing of the neceſſary apparatus. The method which I had now got into was a great improvement upon that which I had made uſe of before the College of Phyſicians. For, in conſequence of giving more attention to it, I had, by that time, brought it to the ſtate in which it is deſcribed in the pamphlet.

In the mean time, I had, before I left London, in the ſpring of that year, made the experiment of the impregnation of water with fixed air in the preſence of moſt of my philoſophical acquaintance, and their friends, both at my own lodgings, and in other places. But upon none of theſe occaſions did it appear that any of them had heard of any other perſon having had the ſame thing in view.

Laſtly, I will obſerve, that Sir John Pringle, in his *Diſcourſe on different kinds of air* (in which he has, with the greateſt exactneſs, aſſigned to every perſon concerned in theſe diſcoveries their due ſhare of praiſe) gives no hint of his being acquainted with any other method of impregnating water with fixed air, than that which I had publiſhed. He certainly had not heard of any of thoſe to which Dr. Nooth alludes.

As I have not to this day, directly or indirectly, made the leaſt advantage of this ſcheme; but, on the contrary, am juſt ſo much a loſer by it as the experiments coſt me, I think it is not too much for the Public to allow me, what I believe is ſtrictly my due, *the ſole merit of the diſcovery*; which with reſpect to *ingenuity*, or ſagacity, is next to nothing; but with reſpect to its *utility* is, unqueſtionably, of unſpeakable value to my country and to mankind.

CHAPTER II.

DIRECTIONS *for impregnating* WATER *with* FIXED AIR.

SECT. I. *The Preface to the Directions as firſt publiſhed.*

The method of impregnating water with fixed air, of which a deſcription is given in this pamphlet, I hit upon in a courſe of experiments; an account of which was lately communicated to the Royal Society; containing obſervations on ſeveral different kinds of air, with only a hint of the method of combining this particular kind with water or other fluids. Judging that water thus impregnated with fixed air muſt be particularly ſerviceable in long voyages, by preventing or curing the ſea-ſcurvy, according to the theory of Dr. Macbride; and all the Phyſicians of my acquaintance concurring with me in that opinion, I made the firſt communication of it to the Lords of the Admiralty, who referred me to the College of Phyſicians; and thoſe gentlemen being pleaſed to make a report favourable to the ſcheme, a trial has been ordered to be made of it on board ſome of his Majeſty's ſhips. To make this proceſs more generally known, and that more frequent trials may be made by water thus medicated, at land as well as at ſea, I have been induced to make the preſent publication.

Sir John Pringle firſt obſerved, that putrefaction was checked by fermentation; and Dr. Macbride diſcovered that this effect was produced by the fixed air which is generated in that proceſs, and upon that principle recommended the uſe of *wort*, as ſupplying a quantity of this fixed air, by fermentation in the ſtomach, in the ſame manner as it is done by freſh vegetables, for which he, therefore, thought that it would be a ſubſtitute; and experience has confirmed his conjecture. Dr. Black found that lime-ſtone, and all calcareous ſubſtances, contain fixed air, that the preſence of it makes them what is called *mild*, and that the deprivation of it renders them *cauſtic*; Dr. Brownrigg farther diſcovered that Pyrmont, and other mineral waters, which have the ſame acidulous taſte, contain a conſiderable proportion of this very kind of air, and that upon this their peculiar ſpirit and virtues depend; and I think myſelf fortunate in having hit upon a very eaſy method of communicating this air to any kind of water, or, indeed, to almoſt any fluid ſubſtance. In ſhort, by this method this great antiſeptic principle may be adminiſtered in a variety of agreeable vehicles.

If this diſcovery (though it doth not deſerve that name) be of any uſe to my countrymen, and to mankind at large, I ſhall have my reward. For this purpoſe I have made the communication as early as I conveniently could, ſince the lateſt improvements that I have made in the proceſs; and I cannot help expreſſing my wiſhes, that all perſons, who diſcover any thing that promiſes to be generally uſeful, would adopt the ſame method.

SECT. 2. *The Directions.*

If water be only in contact with fixed air, it will begin to imbibe it, but the mixture is greatly accelerated by agitation, which is continually bringing freſh particles of air and water into contact. All that is neceſſary, therefore, to make this proceſs expeditious and effectual, is firſt to procure a ſufficient quantity of this fixed air, and then to contrive a method by which the air and water may be ſtrongly agitated in the ſame veſſel, without any danger of admitting the common air to them; and this is eaſily done by firſt filling any veſſel with water, and introducing the fixed air to it, while it ſtands inverted in another veſſel of water. That every part of the proceſs may be as intelligible as poſſible, even to thoſe who have no previous knowledge of the ſubject, I ſhall deſcribe it very minutely, ſubjoining ſeveral remarks and obſervations relating to varieties in the proceſs, and other things of a miſcellaneous nature.

The Preparation.

Take a glaſs veſſel, *a*, pl. 2. fig. 1. with a pretty narrow neck, but ſo formed, that it will ſtand upright with its mouth downwards, and having filled it with water, lay a ſlip of clean paper, or thin paſteboard, upon it. Then, if they be preſſed cloſe together, the veſſel may be turned upſide down, without danger of admitting common air into it; and when it is thus inverted, it muſt be placed in another veſſel, in the form of a bowl or baſon, *b*, with a little water in it, ſo much as to permit the ſlip of paper or paſteboard to be withdrawn, and the end of the pipe *c* to be introduced.

This pipe muſt be flexible, and air-tight, for which purpoſe it is, I believe, beſt made of leather, ſewed with a waxed thread, in the manner uſed by ſhoe-makers. Into both ends of this pipe a piece of a quill ſhould be thruſt, to keep them open, while one of them is introduced into the veſſel of water, and the other into the bladder *d*, the oppoſite end of which is tied round a cork, which muſt be perforated, the hole being kept open by a quill; and the cork muſt fit a phial *e*, two thirds of which ſhould be filled with chalk juſt covered with water.

I have ſince, however, found it moſt convenient to uſe a *glaſs tube*, and to preſerve the advantage which I had, of agitating the veſſel *e*, I have *two bladders*, communicating by a perforated cork, to which they are both tied. For one bladder would hardly give room enough for that purpoſe.

The Proceſs.

Things being thus prepared, and the phial containing the chalk and water being detached from the bladder, and the pipe alſo from the veſſel of water, pour a little oil of vitriol upon the chalk and water; and having carefully preſſed all the common air out of the bladder, put the cork into the bottle preſently after the effervеſcence has begun. Alſo preſs the bladder once more after a little of the newly generated air has got into it, in order the more effectually to clear it of all the remains of the common air; and then introduce the end of the pipe into the mouth of the veſſel of water as in the drawing, and begin to agitate the chalk and water briſkly. This will preſently produce a conſiderable quantity of fixed air, which will diſtend the bladder; and this being preſſed, the air will force its way through the pipe, and aſcend into the veſſel of water, the water at the ſame time deſcending, and coming into the baſon.

When about one half of the water is forced out, let the operator lay his hand upon the uppermoſt part of the veſſel, and ſhake it as briſkly as he can, not to throw the water out of the baſon; and in a few minutes the water will abſorb the air; and taking its place, will nearly fill the veſſel as at the firſt. Then ſhake the phial containing the chalk and water again, and force more air into the veſſel, 'till, upon the whole, about an equal bulk of air has been thrown into it. Alſo ſhake the water as before, 'till no more of the air can be imbibed. As ſoon as this is perceived to be the caſe, the water is ready for uſe; and if it be not uſed immediately, ſhould be put into a bottle as ſoon as poſſible, well corked, and cemented. It will keep, however, very well, if the bottle be only well corked, and kept with the mouth downwards.

Obſervations.

1. The baſon may be placed inverted upon the veſſel full of water, with a ſlip of paper between them, and then both turned upſide down together; but all this trouble will be ſaved by having a larger veſſel of water, in which both of them may be immerſed.

2. If the veſſel containing the water to be agitated be large, it may be moſt convenient firſt to place it inverted, in a baſon full of water, and then to draw out the common air by means of a ſyphon, either making uſe of a ſyringe, or drawing it out with the mouth. In this caſe, alſo,

ſome kind of handle ſhould be faſtened to the bottom of the veſſel, for the more eaſy agitation of it.

3. A narrow mouthed veſſel is not neceſſary, but it is the moſt proper for the purpoſe, becauſe it may be agitated with leſs danger of the common air getting into it.

4. The flexible pipe is not neceſſary, though I think it is exceedingly convenient. When it is not uſed, a bent tube, *a*, fig. 2. (for which glaſs is the moſt proper) muſt be ready to be inſerted into the hole made in the cork, when the bladder containing the fixed air is ſeparated from the phial, in which it was generated. The extremity of this tube being put under the veſſel of water, and the bladder being compreſſed, the air will be conveyed into it, as before.

5. If the uſe of a bladder be objected to, though nothing can be more inoffenſive, the phial containing the chalk and water muſt not be agitated at all, or with

the greateſt caution; unleſs a ſmall phial, *a*, fig. 3. be interpoſed between the phial and the veſſel of water, in the manner repreſented in the drawing. For by this means the chalk and water that may be thrown up the tube *b* will lodge at the bottom of the phial *a*, while nothing but the air will get into the pipe *c*, and ſo enter the water. If the tube *b* be made of tin or copper, the ſmall phial *a* will not need any other ſupport, the cork into which the extremities of both the tubes are inſerted being made to fit the phial very exactly.

6. The phial *e*, fig. 1. ſhould always be placed, or held, conſiderably lower than the veſſel *a*; that if any part of the mixture ſhould be thrown up into the bladder, it may remain in the lower part of it, from which it may be eaſily preſſed back again. This, however, is not neceſſary, ſince if it remain in the lower part of the bladder, nothing but the pure air will get into the pipe, and ſo into the water.

7. If much more than half of the veſſel be filled with air, there will not be a body

of water ſufficient to agitate, and the proceſs will take up much more time.

8. If the chalk be too finely powdered, it will yield the fixed air too faſt.

9. After every proceſs, the water to which the chalk is put muſt be changed.

10. It will be proper to fill the bladder with water once every day, after it has been uſed, that any of the oil of vitriol which may have got into it, and would be in danger of corroding it, may be thoroughly diluted.

11. The veſſel, which I have generally made uſe of, holds about three pints, and the phial containing the chalk and water is one of ten ounces; and I find that a little more than a tea-ſpoonful of oil of vitriol is ſufficient to produce as much air as will impregnate that quantity of water.

12. If the veſſel containing the water be larger, the phial containing the chalk and the oil of vitriol ſhould either be larger in proportion, or freſh water and oil of vitriol

muſt be put to the chalk, to produce the requiſite quantity of air.

13. In general, the whole proceſs does not take up more than about a quarter of an hour, the agitation not five minutes; and in nearly the ſame time might a veſſel of water, containing two or three gallons, or indeed any quantity that a perſon could well ſhake, be impregnated with fixed air, if the phial containing the chalk and oil of vitriol, be larger in the ſame proportion.

14. To give the water as much air as it can receive in this way, the proceſs may be repeated with the water thus impregnated. I generally chuſe to do it two or three times, but very little will be gained by repeating it oftener; ſince, after ſome time, as much fixed air will eſcape from that part of the ſurface of the water which is expoſed to the common air, as can be imbibed from within the veſſel.

15. All calcareous ſubſtances contain fixed air, and any acids may be uſed in order to ſet it looſe from them; but chalk and oil

of vitriol are, both of them, the cheapeſt, and, upon the whole, the beſt for the purpoſe.

16. It may poſſibly be imagined that part of the oil of vitriol is rendered volatile in this proceſs, and ſo becomes mixed with the water; but it does not appear, by the moſt rigid chymical examination, that the leaſt perceivable quantity of the acid gets into the water in this way; and if ſo ſmall a quantity as a ſingle drop of oil of vitriol be mixed with a pint of water (and a much greater quantity would be far from making it leſs wholeſome) it might be diſcovered. The experiments which were made to aſcertain this fact were made with *diſtilled water*, the diſagreeable taſte of which is not taken off, in any degree, by the mixture of fixed air. Otherwiſe, diſtilled water, being clogged with no foreign principle, will imbibe fixed air faſter, and retain a greater quantity of it than other water. In the experiments that were made for this purpoſe, I was aſſiſted by Mr. Hey, a ſurgeon in Leeds, who is well ſkilled in the methods of examining the properties of mineral waters.

17. Dr. Brownrigg, who made his experiments on Pyrmont water at the ſpring head, never found that it contained ſo much as one half of an equal bulk of air; but in this method the water is eaſily made to imbibe an equal bulk. For it muſt be obſerved, that a conſiderable quantity of the moſt ſoluble part of the air is incorporated with the water, as it firſt aſcends through it, before it occupies its place in the upper part of the veſſel.

18. The heat of boiling water will expel all the fixed air, if a phial containing this impregnated water be held in it; but it will often require above half an hour to effect it compleatly.

19. If any perſon would chuſe to make this medicated water more nearly to reſemble genuine Pyrmont water, Sir John Pringle informs me, that from eight to ten drops of *Tinctura Martis cum ſpiritu ſalis* muſt be mixed with every pint of it. It is agreed, however, on all hands, that the peculiar virtues of Pyrmont, or any other mineral water which has the ſame briſk or acidulous

taſte, depend not upon its being a chalybeate, but upon the fixed air which it contains.

But water impregnated with fixed air does of itſelf diſſolve iron, as the ingenious Mr. Lane has diſcovered; and iron filings put to this medicated water make a ſtrong and agreeable chalybeate, ſimilar to ſome other natural chalybeates, which hold the iron in ſolution by means of fixed air only, and not by means of any acid; and theſe chalybeates, I am informed, are generally themoſt agreeable to the ſtomach.

20. By this proceſs may fixed air be given to wine, beer, and almoſt any liquor whatever: and when beer is become flat or dead, it will be revived by this means; but the delicate agreable flavour, or acidulous taſte communicated by the fixed air, and which is manifeſt in water, will hardly be perceived in wine, or other liquors which have much taſte of their own.

21. I would not interfere with the province of the phyſician, but I cannot entirely ſatisfy myſelf without taking this opportu-

nity to ſuggeſt ſuch hints as have occurred to myſelf, or my friends, with reſpect to the *medicinal uſes* of water impregnated with fixed air, and alſo of fixed air in other applications.

In general, the diſeaſes in which water impregnated with fixed air will moſt probably be ſerviceable, are thoſe of a *putrid* nature, of which kind is the *ſea-ſcurvy*. It can hardly be doubted, alſo, but that this water muſt have all the medicinal virtues of Pyrmont water, and of other mineral waters ſimilar to it, whatever they be; eſpecially if a few iron filings be put to it, to render it a chalybeate, like genuine Pyrmont water. It is poſſible, however, that, in ſome caſes it may be deſirable to have the *fixed air* of Pyrmont water, without the *iron* which it contains.

Having this opportunity, I ſhall alſo hint the application of fixed air in the form of *clyſters*, which occurred to me while I was attending to this ſubject, as what promiſes to be uſeful to correct putrefaction in the inteſtinal canal, and other parts of the ſyſtem to which it may, by this channel, be conveyed. It has been tried once by Mr. Hey above-mentioned, and the recovery of the patient from an alarming putrid fever, when the ſtools were become black, hot, and very fetid, was ſo circumſtanced, that it is not improbable but that it might be owing, in ſome meaſure, to thoſe clyſters. The application, however, appeared to be perfectly eaſy and ſafe.

I cannot help thinking that fixed air might be applied externally to good advantage in other caſes of a putrid nature, even when the whole ſyſtem was affected. There would be no difficulty in placing the body ſo, that the greateſt part of its ſurface ſhould be expoſed to this kind of air; and if a piece of putrid fleſh will become firm and ſweet in that ſituation, as Dr. Macbride found, ſome advantage, I ſhould think, might be expected from the ſame antiſeptic application, aſſiſted by the *vis vitæ*, operating internally, to counteract the ſame putrid tendency. Some Indians, I have been informed, bury their patients, labouring under putrid diſeaſes, up to the chin in freſh mould, which is alſo known to take off the fœtor from fleſh meat beginning to putrify. If this practice be of any uſe, may it not be owing to the fixed air imbibed by the pores of the ſkin in that ſituation? Following the plough is an old preſcription for a conſumption, as alſo is living near lime kilns. There is often ſome good reaſon for very old and long continued practices, though it is frequently a long time before it be diſcovered, and the *rationale* of them ſatisfactorily explained.

Being no phyſician, I run no riſque by throwing out theſe random hints and conjectures. I ſhall think myſelf happy, if any of them ſhould be the means of making thoſe perſons, whom they immediately concern, attend more particularly to the ſubject. My friend Dr. Percival has for ſome time paſt been employed in making experiments on fixed air, and he is particularly attentive to the medicinal uſes of it; and from his knowledge as a philoſopher, and ſkill in his profeſſion, I have very conſiderable expectations.

CHAPTER III.

Of Dr. NOOTH'*s Objections to the preceding Method of impregnating Water with fixed Air, and a Compariſon of it with his own Method, both as publiſhed by himſelf, and as improved by Mr.* PARKER.

I can eaſily forgive Dr. Nooth for his repreſenting me as having no other merit than the *firſt publication* of the method for impregnating water with fixed air, accounting for it as I have done before; but I cannot ſo eaſily forgive another paragraph in his paper, the tendency of which is intirely to diſcredit a method, which, though it is, in ſome reſpects, inferior to his own, has nevertheleſs its peculiar advantages: and every advantage cannot poſſibly concur in any one method. He ſays, p. 59, "Independent of the inconveniencies attending the proceſs, there was "another objection to the apparatus, which, "with moſt people, might have conſiderable weight. The *bladder*, which formed "part of it, was thought to render the "water offenſive; and when the ſolvent "power of fixed air is conſidered, it will "not appear improbable, that the water "would be always more or leſs tainted by "the bladder. In ſome trials which I "made with Dr. Prieſtley's apparatus, it "always happened that the water acquired "an *urinous flavour*; and this taſte was, "in general, ſo predominant, that it could "not be ſwallowed without ſome degree "of reluctance."

That Dr. Nooth *did* produce an impregnated water which he could not ſwallow without reluctance, and even that, in the trials to which he refers, he *generally* produced ſuch water, I am far from doubting; becauſe that might happen from various cauſes. But that the urinous flavour came from the *bladder*, as ſuch, I will venture to ſay is not poſſible. For then it would *always* have had the ſame effect; and not only myſelf have never perceived ſuch a flavour as the Doctor complains of, but this is the only complaint of the kind that I have hitherto heard of; though many perſons of the moſt delicate taſte, and particularly many ladies, have uſed the water impregnated in my method for months together. Few perſons have had to do with bladders, and fixed air confined in bladders, more than myſelf; and yet I have never ſeen any reaſon to ſuſpect this great *ſolvent power* of fixed air with reſpect to them; eſpecially ſo as to be apparent in the ſpace of a few minutes.

But ſuppoſing the fixed air to be capable of diſſolving the whole bladder, and to carry it along with itſelf into the impregnated water, no phyſician, or philoſopher, will pretend to ſay that it could have any more tendency to give it an *urinous flavour*, than if it had been any other membrane of the animal body.

Indeed, as the Doctor himſelf does not pretend to ſay that this ſtrange urinous flavour was the effect of *all* the impregnations of water made in my method, but only in *ſome* of them (though it was *generally* ſo, in thoſe particular trials) it is evident, from his tacit confeſſion, that it muſt have been an *accidental thing*, and could not have come from the bladder, which I ſuppoſe he made uſe of in all trials. For he has not done me the juſtice to acknowledge that, in my pamphlet, among the various methods of effecting the impregnation of water, I have deſcribed one in which no bladder is made uſe of. When the Doctor ſhall once more produce this urinous flavour (and as a new and curious experiment, it is certainly worthy of his farther inveſtigation) taking care that no careleſs ſervant ſhall have mixed any urine in the water that he calls for, I ſhall give this new objection to my proceſs a farther examination. At preſent I am inclined to conſider this as an experiment of the ſervant, rather than of the Doctor himſelf.

Several perſons have thought that fixed air diſcharged from *impure chalk* gives the water that is impregnated with it a diſagreeable flavour, but this I have never obſerved myſelf; and any other calcareous matter may be uſed in my method, as well as in that of Dr. Nooth, who recommends chalk, as the beſt upon the whole.

I ſhall conclude theſe animadverſions with doing what Dr. Nooth ought to have done before me, viz. fairly ſtating the advantages and diſadvantages of our two methods. His method requires *leſs ſkill* in the operator, and *a leſs conſtant attention.* It is alſo *more elegant* and cleanly, I mean with reſpect to the *operator*; for this does not at all affect the *impregnated water.* On theſe accounts I generally recommend and make uſe of his method myſelf, eſpecially as the glaſſes are made with improvements by Mr. Parker. But if Dr. Nooth be candid, he muſt acknowledge that my method requires much *leſs time,* and is much *leſs expenſive*; and therefore muſt be more proper when a great quantity of impregnated water is wanted; and eſpecially when there is but little room to make it in.

My method indeed requires a conſtant attendance, but I queſtion whether, upon the whole, more than is neceſſary to be given to Dr. Nooth's method at intervals, if the water be at all agitated; conſidering that mine does not require one-tenth part of the time. And though my method requires ſome little ſkill and addreſs, it is not ſo much, but that many perſons, altogether unuſed to experiments, have, to my knowledge, ſucceeded in it very well, and have made the impregnated water in a conſtant way for their family uſe, and without any aſſiſtance beſides what they got from the printed directions. My apparatus coſts little or nothing, becauſe no veſſels are made for the purpoſe; and both the chalk and the acids are made to go as far as poſſible, by means of the convenient agitation of the veſſel in which they are contained. Whereas Dr. Nooth's method requires a peculiar and expenſive apparatus, and more waſte is unavoidable in the uſe of it. However, for the reaſons abovementioned, I have never recommended my own method for the uſe of a family ſince I have been acquainted with his.

What I have ſaid above is rather applicable to the apparatus as it is made by

Mr. Parker, than to that which Dr. Nooth has deſcribed. For Mr. Parker's glaſſes are, in my opinion, conſiderably improved from thoſe of Dr. Nooth. It may be ſaid that the improvements conſiſt in *little things*; but little things may have great effects; and, after the diſcovery of the *firſt method* of accompliſhing this end, all *ſubſequent methods* may be called little things; and they may be endleſsly diverſified, without any great claim of merit. I have ſeen ſeveral very ingenious methods ſince the publication of mine, though none that I like ſo much, upon the whole, as that of Dr. Nooth, improved by Mr. Parker.

In Dr. Nooth's apparatus, if any more air than is wanted be produced, the water will run out of the uppermoſt veſſel. To uſe his own words, p. 63, "Should more "air be extricated than is ſufficient, in "the conduct of the proceſs, to fill that "veſſel, the water will run over the top "of it, and will continue to run as long "as any air aſcends in the middle veſſel, "or 'till the ſurface of the water is below "the extremity of the bent tube; and in

“ this caſe the whole would be wet and “ diſagreeable.” But this diſagreeable conſequence can never happen in the uſe of Mr. Parker’s glaſſes, becauſe the bent tube in which the uppermoſt veſſel terminates is made of ſuch a length, that the water expelled from the middle veſſel can do no more than nearly fill the uppermoſt, and can never run over; ſo that whereas Dr. Nooth’s apparatus requires a conſtant attendance, Mr. Parker’s requires none. The materials being once put into it, the proceſs will go on of itſelf, without any farther care; unleſs the operator ſhould chuſe to accelerate the impregnation by now and then letting out the air that is not eaſily abſorbed, and by agitating the water. This I think to be a conſiderable advantage gained by a very eaſy contrivance of Mr. Parker’s, overlooked by Dr. Nooth.

Mr. Parker derives another conſiderable advantage from a *channel* which he cuts in the ſtopper of his uppermoſt veſſel, or from a ſtopper with a hole through the middle, which Dr. Nooth has not in his; ſo that either the operator muſt be careful to take it out during the effervеſcence, or it will be driven out, or ſome of the veſſels will burſt, to the great danger of the by-ſtanders; which actually happened in one made by Mr. Parker, before he thought of this method to prevent it. Whereas, through the channel in Mr. Parker's apparatus, the common air eaſily eſcapes from the uppermoſt veſſel, to make room for the water to aſcend; and when, in the continuance of the proceſs, the fixed air riſes through the bent tube into the uppermoſt veſſel, it lodges upon the ſurface of the water in it; and the communication between it and the common air being ſo much obſtructed, they are ſufficiently ſeparated; ſo that even the water in the uppermoſt veſſel has (if the production of air be copious) almoſt as much advantage for receiving the impregnation, as that in the middle veſſel. This advantage Dr. Nooth loſes.

Alſo, when he chuſes to ſeparate the two uppermoſt veſſels from the loweſt, in order to agitate the water, he muſt either leave the mouth of the uppermoſt veſſel open, in which caſe he can hardly agitate the water at all; or (as he prefers to do it) he muſt put the ſtopper in, and conſequently admit the common air to paſs his valve, and mix with the fixed air, which muſt greatly retard the abſorption of it: whereas Mr. Parker's veſſels may be agitated with the ſtopper in, which, admitting the common air into the upper veſſel, through the channel cut in it (or through the hole of the ſtopper) permits the water to deſcend into the lower, on the ſurface of which nothing but fixed air is incumbent. Should any common air enter by the valve, which in this caſe it hardly would, the finger of the perſon who ſhakes the veſſel may eaſily be placed ſo as to prevent it.

Laſtly, I conſider it as a valuable improvement in Mr. Parker's apparatus, that, by means of the openings into the middle and loweſt veſſels, cloſed with ground ſtopples, the operator is enabled to draw off his water, in order to taſte it occaſionally, or to add to his oil of vitriol or chalk, &c. at pleaſure, without giving himſelf the trouble of ſeparating the veſſels from one another for thoſe purpoſes.

The firſt apparatus that I ſaw of Mr. Parker's had no *valve* at all, but only a glaſs ſtopple, with one or more ſmall perforations, for the aſcent of the air into the middle veſſel. This I ſtill generally make uſe of, without finding any occaſion for a valve; the aſcent of the fixed air ſufficiently preventing the deſcent of the water, as long as the proceſs continues, eſpecially when pounded *marble* is uſed. This ſubſtance Dr. Franklin recommended to me, and I give it the preference very greatly to chalk, chiefly on account of the length of time that is required to expel the air from it: For without any freſh acid, it will often continue to yield air for ſeveral days together.

That thoſe perſons who are not poſſeſſed of the Engliſh *Philoſophical Tranſactions*, and particularly foreigners, may underſtand what has preceded, I ſhall give a drawing of Dr.

Nooth's apparatus,[†] as improved by Mr. Parker, with the following general deſcription of it.

In the loweſt veſſel, the chalk or marble, and the water acidulated with oil of vitriol, muſt be put, and into the middle veſſel the water to be impregnated. During the effervescence, the fixed air riſes into the middle veſſel, and reſts upon the ſurface of the water in it, while the water that is diſplaced by the air riſes through the bent tube into the uppermoſt veſſel, the common air going out through the channel in the ſtopple. When the bent tube is of a proper length, the proceſs requires no attention; and if the production of air be copious, the water will generally be ſufficiently impregnated in five or ſix hours. At leaſt, all the attention that needs be given to it is to raiſe the uppermoſt veſſel once or twice, to let out that part of the fixed air which is not readily abſorbed by water. If the operator chuſe to accelerate the proceſs, by agitating the water, he muſt ſeparate the two uppermoſt veſſels from the loweſt. For if he ſhould agitate them all together, he will occaſion too copious a production of air; and he will alſo be in danger of throwing the liquor contained in the loweſt veſſel into contact with the ſtopple which ſeparates it from the middle veſſel, by which means ſome of the oil of vitriol might get into the water.

[†] Fig. 2.

End of the Extract from Dr. PRIESTLEY'*s*
Experiments on Air, Vol. II.

APPENDIX.

APPENDIX.

Dr. NOOTH's *Method of* IMPREGNATING WATER *with* FIXED AIR, *as improved by Mr.* PARKER, *Mr.* MAGELLAN, *&c.*

Deſcription of the Apparatus.

See Fig. 4.

IT is made of glaſs, and ſtands on a wooden veſſel *d d* reſembling a tea-board, to catch any water that may chance to be ſpilled, and prevent it from falling on the table. The middle veſſel B has a neck which is inſerted into the mouth of the veſſel A, to which it is ground air-tight. This lower neck of the veſſel B, has a glaſs ſtopple S, compoſed of two parts, both having holes ſufficient to let a good quantity of air paſs through them. Between theſe two parts (which may be conſidered as two ſtopples) is left a ſmall ſpace, containing a plano convex lens, (that is, a glaſs round on one ſide and flat on the other) which acts like a valve, in letting the air paſs from below upwards, and hindering its return into the veſſel A.

The upper veſſel C terminates below in a tube *r t*, which being crooked, hinders the immediate aſcent of the bubbles of fixed air into that veſſel, before they reach the ſurface of the water in the veſſel B. The veſſel C is alſo ground air-tight to the upper neck of the middle veſſel B, and has a ſtopple *p* fitted to its upper mouth, which has an hole through its middle. The upper veſſel C holds juſt half as much as the middle one B; and the end *t* of the crooked tube, goes no lower than the middle of the veſſel B.

The Proceſs.

Fill the middle veſſel B with ſpring, or any other clean and wholeſome water, and join to it again the upper veſſel C. Pour water into the veſſel A (by the opening *m*, or otherwiſe) ſo as to cover the riſing part of its bottom. About three quarters of a pint, or a little more, will be ſufficient. Fill an ounce phial with oil of vitriol, and add it to the water, ſhaking the veſſel ſo as to mix them well together. As heat is generated, it will be better to add the oil by a little at a time, otherwiſe a hazard is run of breaking the veſſel. Put to this, through a wide glaſs, or paper funnel, about an ounce of powdered raw chalk, or marble *. The funnel muſt be uſed in order to prevent the powder from touching the inſide of the veſſel's mouth;

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* White marble being firſt granulated, or pounded like coarſe ſand, is much better for the purpoſe than pounded chalk, becauſe it is harder; and therefore the action of the diluted acid upon it is ſlower, and laſts a very conſiderable time. The ſupply of fixed air from it is therefore much more regular than with the chalk. In general, it continues to furniſh fixed air more than twenty-four hours. When no more air is produced, if the water be decanted from the veſſel A, and the white ſediment waſhed off, the remaining granulated marble may be employed again by adding to it freſh water, and a new quantity of oil of vitriol. A farther produce of fixed air will then be furniſhed, and this may be repeated until all the marble be diſſolved.

for if that happens, it will ſtick ſo ſtrongly to the neck of the veſſel B, as not to admit of their being ſeparated without breaking. Place immediately the two veſſels B and C (faſtened to each other) into the mouth of the veſſel A, as in the figure, and all the fixed air which is diſengaged from the chalk or marble by the oil of vitriol, will paſs up through the valve in S into the veſſel B. When this fixed air comes to the top of the veſſel B, it will diſlodge from thence as much water as is equal to its bulk; which water will be forced up through the crooked tube into the upper veſſel C.

Care muſt be taken not to ſhake the veſſel A when the powdered chalk is put in; otherwiſe a great and ſudden effervescence will enſue, which will perhaps expel part of the contents. In ſuch caſe it may be neceſſary to open a little the ſtopple *p*, in order to give vent, otherwiſe the veſſel A may burſt. It will be proper alſo to throw away the contents, and waſh the veſſel; for the matter will ſtick between the necks of the veſſels, and cement them together. The operation muſt then be begun afreſh. But if the chalk be thrown in without ſhaking the machine, or if marble be uſed, the effervefcence will not be violent. If the chalk be put into the veſſel looſely wrapt up in paper, this accident will be ſtill better guarded againſt. When the effervefcence goes on well, the veſſel C will ſoon be filled with water, and the veſſel B half filled with air; which will eaſily be known to be the caſe by the air going up in large bubbles through the crooked tube *r t*.

When this is obſerved, take off the two veſſels B and C together as they are, and ſhake them ſo that the water and air within them may be much agitated. A great part of the fixed air will be abſorbed into the water; as will appear by the end of the crooked tube being conſiderably under the ſurface of the water in the veſſel. The ſhaking them for two or three minutes will be ſufficient for this purpoſe. Theſe veſſels muſt not be ſhook while joined to the under one A, otherwiſe too great an effervefcence will be occaſioned in the latter;

together with the ill conſequences abovementioned. After the water and air have been ſufficiently agitated, looſen the upper veſſel C, ſo that the remaining water may fall down into B, and the unabſorbed air paſs out. Put theſe veſſels together, and replace them into the mouth of A, in order that B may be again half filled with fixed air. Shake the veſſels B and C, and let out the unabſorbed air, as before. By repeating the operation three or four times, the water will be ſufficiently impregnated.

Whenever the effervеſcence nearly ceaſes in the veſſel A, it may be renewed by giving it a gentle ſhake, ſo that the powdered chalk or marble at the bottom may be mixed with the oil of vitriol and water above it; for then a greater quantity of fixed air will be diſengaged.

When the effervеſcence can be no longer renewed by ſhaking the veſſel A, either more chalk muſt be put in, or more oil of vitriol; or more water, if neither of theſe produce the deſired effects.

The ingenious Mr. Magellan has ſtill farther improved the contrivance of Dr. Nooth and Mr. Parker. He has two ſets of the veſſels B and C. While he is ſhaking the air and water contained in one of theſe ſets, the other may be receiving fixed air from the veſſel A. By this means twice the quantity of water may be impregnated in the ſame time. He has a wooden ſtand K (Fig. 5.) to fix the veſſels B C on, when taken off from A, which is very convenient. He has a ſmall tin trough for meaſuring the quantity of chalk or marble requiſite for one operation, and a wide glaſs funnel for putting it through into the veſſel A, to prevent its ſticking to the ſides, as mentioned before.

He has alſo contrived a ſtopple without an hole to be uſed occaſionally inſtead of the perforated one *p*. It has a kind of baſon at the top to hold an additional weight when neceſſary. (See Fig. 6.) The ſtopple muſt be of a conical figure, and very looſe; but ſo exactly and ſmoothly ground as to be air-tight merely by its preſſure, which may be encreaſed by additional weights put into its baſon. Its uſe is to compreſs the fixed air on the water, and thereby encreaſe the impregnation. For by keeping the air on the water in this compreſſed ſtate, the latter may be made to ſparkle like Champaign. And if the veſſels are ſtrong, there will be no danger of their burſting in the operation.

If the veſſels be ſuffered to ſtand ſix or eight hours, the water will be ſufficiently impregnated even without agitation. But by employing the means above deſcribed, it may be done in as many minutes.

The water thus impregnated may be drawn out at the opening *k*. But if it is not wanted immediately, it will be better to let it remain in the machine, where it has no communication with the external air. Otherwiſe the fixed air flies off by degrees, and the water becomes vapid and flat; as alſo happens to other acidulous waters. But it may be kept a long time in bottles well ſtopped, eſpecially if they are placed with their mouths downwards.

This water is more pleaſant to the taſte than the natural Pyrmont or Seltzer waters; as beſides their fixed air, they contain ſaline particles of a diſagreeable taſte, which are known to contribute little or nothing to their medicinal virtues; and may, in ſome caſes, be hurtful. The artificial water is alſo double the ſtrength of the natural; the latter containing ſcarce half of the fixed air which can thus be communicated to the former.

N. B. Mr. Blades, of Ludgate Hill, has ſtill further improved this apparatus, by changing the ſtopple at *k* for a glaſs cock, which is more convenient. He has likewiſe altered the middle veſſel B into a form more advantageous for the impregnation. See Fig. 7.

A Method of imitating the SULPHUREOUS *Mineral Waters, by impregnating Water with* SULPHUREOUS AIR.

We may imitate the *ſulphureous* mineral waters, as well as the *acidulous* ones, or thoſe impregnated with fixed air. The proceſs is ſufficiently ſimple; and the ſame apparatus will ſerve for both.

Inſtead of limeſtone, chalk, or marble, *liver of ſulphur* is to be uſed. It may be bought ready prepared of the chymiſts or apothecaries; or may eaſily be prepared as follows:

Mix together equal parts of brimſtone, and of clean pot aſhes *, and place them in a crucible, or unglazed diſh, over a very gentle fire. Keep them ſtirring with a ſtick 'till they are united together into a blood-red maſs. Put it, while warm, into a bottle, which is to be kept well cloſed.

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* Quick lime may be uſed inſtead of pot aſhes, taking care to chuſe it well burnt.

Put a ſufficient quantity of this ſubſtance, with the oil of vitriol and water, into the part A of the apparatus, and proceed as deſcribed in the proceſs for impregnating water with fixed air; the *ſulphureous* air will ariſe; the water in the middle veſſel B will be impregnated with it, will ſmell ſtrongly ſulphureous, and reſemble the celebrated waters of *Aix la Chapelle*, &c. in the ſame manner as thoſe impregnated with fixed air reſemble thoſe of *Pyrmont* and *Seltzer*.

The water thus impregnated may be heated, by putting it into a cloſe veſſel, placed in one that contains boiling water, and it is then a *warm ſulphureous water*.

If it be not uſed immediately, it ſhould be preſerved in glaſs or ſtone bottles, well corked, and cemented, and placed with the corks downward in a cellar.

To imitate more exactly the ſeveral Mineral Waters.

This conſiſts only in adding to the water to be impregnated, the ſolid matters which they are found to leave behind on evaporation. For example;

1.

PYRMONT WATER.

Add to the water in the middle veſſel B, in the proportion of about thirty grains of Epſom ſalt, ten grains of common ſalt, a ſcruple of magneſia alba, and a dram of iron filings, or iron wire, clean and free from ruſt, to one gallon of ſpring water, and impregnate the whole with fixed air in the manner deſcribed. Let them remain 'till the other ingredients, and as much of the iron as is neceſſary, are diſſolved, which will be in two or three days; or the magneſia may be omitted, and then the operation will be finiſhed in leſs than half that time.

2.

SPAW WATER.

Take of the foſſil alkali, or ſal ſodæ, a ſcruple, of common ſalt twelve grains, ſpring water a gallon; impregnate them with fixed air; a few iron filings muſt alſo be added.

3.

SELTZER WATER.

Take of the foſſil alkali a ſcruple, common ſalt about the ſame quantity, magneſia one ſcruple, ſpring water a gallon, and impregnate them with fixed air. Or it may be made without the magneſia.

4.

SEIDSCUTZ PURGING WATER,

(reſembling our EPSOM.)

Take of Epſom ſalt three ounces, water a gallon, and impregnate them with fixed air.

5.

AIX-LA-CHAPELLE WATER.

Take of ſea ſalt half a dram, foſſil alkali a dram, clean chalk a ſcruple, water a gallon. Impregnate them with ſulphureous air.

Other waters may in like manner be imitated by adding Epſom ſalt for purging waters, ſea ſalt for ſalt waters, &c. And as ſome waters (as the cold ſulphureous ones) contain both *fixed* and *ſulphureous* air, a mixture of liver of ſulphur and chalk may be put into the veſſel A with the oil of vitriol, by which means both theſe airs will be produced, and the water of courſe impregnated with them.

AN

ACCOUNT

OF THE

NATURE, PROPERTIES,

AND

MEDICINAL VIRTUES

OF THE

Principal Mineral Waters

IN

GREAT BRITAIN AND IRELAND;

AND OF THOSE

MOST IN REPUTE IN FOREIGN PARTS.

Digeſted into Alphabetical Order.

By JOHN ELLIOT, M.D.

INTRODUCTION.

THE following treatiſe on Mineral Waters being intended for the Public in general, the Editor has endeavoured to couch it in ſuch terms as that it may be underſtood by thoſe who are unacquainted with the art of phyſic. Such an account has been judged by many very proper to be ſubjoined to the foregoing diſſertation.

All the mineral waters in *England*, of any note, will be found noticed in this tract: together with their virtues, and the method, and ſeaſon of uſing them, ſo far as could be learnt from the authors who have been conſulted on the occaſion. To theſe are added all the principal mineral waters of *Scotland* and *Ireland*, as well as the moſt celebrated ones which the Engliſh valetudinarian may have occaſion to viſit on the continent.

The greateſt part of the books which have hitherto been written on this ſubject, abound with experiments tending to ſhew the *analyſis* of thoſe waters. But this can be of little uſe except to the faculty; and muſt be dry, and perfectly unintereſting to common readers. Beſides, the neceſſity of ſuch accounts is superſeded by ſpecifying the ingredients themſelves with which the waters are impregnated, and their virtues as medicines; to ſhew which is the ſole end of theſe experiments. It would alſo have ſwelled the volume to an unwieldy ſize. For this laſt reaſon, as alſo becauſe it was judged wholly unneceſſary and ſuperfluous, the deſcriptions of the places in which the reſpective waters are ſituated, are likewiſe omitted.

For the convenience of the reader, the waters are arranged in *alphabetical* order, by which means they will the more readily be found. I wonder indeed that this method is not obſerved by authors on many other occaſions. For though there be a ſyſtematical arrangement of the things treated of in their books, yet the reader is, after all, obliged to refer to an *index*; which in fact is an alphabetical arrangement of the particulars of the ſubject.

The reader will find accounts of a great number of waters which he probably never heard of before. As many of thoſe are of ſimilar virtues to others which are more famous, the invalid will be inſtructed where to find a mineral water proper for his complaint near at hand, when it might not be convenient for him, on account of the diſtance, or otherwiſe, to repair to thoſe of greater *note*, though perhaps not of ſuperior *virtue*.

For this purpoſe alſo, as well as for the more readily finding out waters of particular virtues, theſe waters are claſſed or arranged according to their reſpective mineral properties; as will preſently be ſeen.

Water is uſually reckoned by philoſophers a ſimple element; but, from the nature of the ſoil over which it paſſes, and other accidents to which it is expoſed, it is always more or leſs impregnated with foreign particles. According to the nature of theſe particles, the properties of the water are different. Hence we have *hard* water, *ſoft* water, *ſalt* water, and the almoſt infinite variety of *mineral* waters. The principal of the latter, in this part of the world, will be found noticed in the following tables:

1ſt. CHALYBEATE WATERS.

Hampſtead
Carlton
Iſlington
Leez
Markſhall
Felſtead
Wellenbrow
Ayleſham
Malvern
Colurian
Harrogate
Road
Ilmington
Birmingham
Cannock
Moſs Houſe
Wigan
Sene
Thetford
Lincomb
Llandrindod
Peterhead
Glendy
Aberbrothick
Cobham
Tunbridge
Buxton
Millar's Spaw
Latham
Tibſhelf
Chippenham
Witham
Lancaſter
Whiteacre
Weſt Aſhton
Cawthorp
Derby
Weatherſtack
Filah
Dortſhill
Stanger
Dunſe

Caſtle Connel
Tralee
Granſhaw
Newton Stewart
Galway
Coolauran
Liſdonvarna
Ballycaſtle
Glanmile
Kanturk
Dunnard
Maccroomp
Wexford
Ballyſpellan
Nezdenice
Kuka
Spaw
Zahorovice
Bromley

Chalybeate waters are the moſt uſeful and beneficial to health of any of the mineral waters; and are very plentiful in this iſland.

Waters are known to be chalybeate by their ſtriking a reddiſh purple, or black colour with an infuſion of galls; and according to the height of the colour, provided the ſtrength of the infuſion be the ſame, we judge of the ſtrength of the water as a chalybeate.

The iron in thoſe waters is held in ſolution by means of fixed air, as may be judged from what has been already ſaid on this ſubject. As the fixed air ſoon flies off on expoſing the water, the iron falls to the bottom in form of a browniſh yellow powder. Hence theſe waters ſtrike the deepeſt black with galls at the ſpring head; and in time they wholly loſe that property.

They have a briſk acidulous or vinous taſte when freſh, and tinge the ſtools black.

Taken inwardly they ſtrengthen the conſtitution in general, encreaſe the tone of the fibres, quicken the circulation, and reſtore a proper conſiſtence to the blood when in a too thin and watery ſtate. And hence they are found to invigorate the whole frame. They are good in diſeaſes ariſing from weakneſs. In ſpaſmodic diſorders, ariſing from too great irritability and relaxation of the nervous ſyſtem. In fluor albus, and gleets; in female obſtructions; in hyſteric and hypochondrical diſorders; in loſs of appetite and digeſtion; and in a variety of other complaints, as will be ſpecified in treating of the reſpective waters; they differing ſomewhat in their virtues.

Previous to a courſe of theſe waters, bleeding, and a cooling purge, may be neceſſary, in caſe of heat and fever; and coſtiveneſs ſhould alſo be avoided while drinking them. Where there is much fever, and alſo in ulcers of the lungs, and in confirmed obſtructions attended with fever, the uſe of theſe waters is improper.

Patients ought to begin with drinking a ſmall quantity of theſe waters every morning, and gradually to increaſe the doſe. A temperate and moderate diet, and gentle exerciſe ſhould alſo be obſerved while taking them.

If the waters are too cold for the ſtomach, a little warm water may be mixed with them juſt before drinking.

Acids, tea, and other things, which decompoſe theſe waters, ſhould not be taken for ſome time before or after drinking them.

Beſides iron, theſe waters uſually contain ſea ſalt, the foſſil alkali, a purging ſalt, or other ſubſtance, as will be noticed when treating of them.

2d. CHALYBEATE PURGING WATERS.

Knowſley
Burlington
Aſtrope
Coventry
Bournley
Townley
Newham Regis
Binley
Kingſcliff
Thirſk
Hartlepool
Thornton
Orſton
Stenfield
Kirby
Tarleton
Malton
Aſwarby
Scarborough
Cheltenham
Bagnigge
Stoke
Woodham Ferris
Hanlys
Athlone
Mount Pallas
Killinſhanvally
Cleves
Driburg
Hoff Geiſmar
Pyrmont
Egra
Nevil Holt
Ballycaſtle
Deddington
Drig-Well
Inglewhite
Gainſborough
Thorp Arch
Caſtlemaign
Ballynahinch
Jeſſop

Theſe chalybeate waters contain a greater proportion of purging ſalt than of any other ſolid matter, and therefore when taken in ſufficient quantity (ſeveral pints) they operate by ſtool. They have this advantage over other purges, that they do not exhauſt the ſtrength.

If taken in leſs quantity, as alteratives, they operate chiefly by urine, and then they fall rather under the firſt claſs of theſe waters than the preſent.—*See what was ſaid of chalybeate waters.*

3d. SULPHUREOUS WATERS.

Sutton Bog
Wigleſworth
Chadlington
Bilton
Queen Camel
Nottington
Drumgoon
Swadlingbar
Derryleſter
Liſbeak
Killaſher
Mechan
Aſhwood
Derryhence
Drumaſnave
Anaduff
Aphaloo
Harrogate
Maudſby
Crickleſpaw
Broughton
Shettlewood

Reddleſtone
Durham
Wardrow
Skipton
Rippon
Llandrindod
Moffat
Carſtarphin

* Aix la Chapelle
* Borſet
* Chaude Fontaine
* Bareges
* Baden Baden
* ~~Bath~~
* ~~Matlock~~

Waters called *ſulphureous* do not contain an actual ſulphur, but are impregnated with a gas, or ſpirit (the ſulphureous air already deſcribed) which gives them their ſulphureous ſmell. Beſides this, they uſually contain either the foſſil alkali, ſea ſalt, a purging ſalt, iron, an earth, or other matter, and commonly ſeveral of theſe in different proportions.

Waters of this ſort are diuretic, and ſtrongly diaphoretic, and are therefore good in cutaneous diſeaſes, uſed both internally and externally. They are alſo good in chronic obſtructions; and in diſorders proceeding from acidity, from worms, &c.

They uſually make ſilver appear of a copper colour.

4th. Sul-

4th. SULPHUREOUS PURGING WATERS*.

Aſkeron
Croft
Cawley
Cunley Houſe
Buglawton
Loanſbury
Normanby
Shapmoor
Upminſter
Codſalwood
Wirkſworth
Derrindaff
Owen Bruen
Pettigoe

Theſe waters differ from thoſe in the preceding claſs in containing a purging ſalt as the principal ſolid ingredient, and therefore operating by ſtool. They are good in the ſame diſorders as the alterative ſulphureous waters, as alſo for foulneſſes of the bowels, &c.

5th. ACIDULOUS, OR SALINE WATERS.

Seltzer
Tilbury
Clifton
Glaſtonbury
Toberbony
Carrickmore
St. Bartholomew
Cape Clare
Buch
Tonſtein
* Mount d'Or

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* Some of the chalybeate purging waters are alſo ſulphureous.

The waters of this claſs contain the foſſil alkaline ſalt. This ſalt, as the waters are taken up from the fountain, is ſaturated, or rather ſuperſaturated, with fixed air; hence the waters do not then manifeſt any alkaline quality; on the contrary, they curdle with ſoap, and are termed *acidulæ*. This *fixed air*, or *aërial acid*, however, being very volatile, ſoon exhales when the water is heated, or ſtands awhile expoſed, and then the alkali manifeſts itſelf.

The general virtues of theſe waters may be known from what is ſaid in the alphabet, under the article SELTZER WATER.

6. SALINE PURGING WATERS.

Barrowdale
Leamington
New Cartmal, or Rougham
St. Eraſmus
Cargyrle
Dortſhill
Alford
Dulwich
Holt
Stretham
Kilburn
Moreton-ſee
Hanlys
Conmer
Bagnigge

Barnet
North-hall
Acton
Epſom
Alkerton
Ball, or Bandwell
Llandrindod
Kenſington
Richmond
Upminſter
Seidlitz
* Balaruc
Sea Water
Dog and Duck
Kinalton
Brentwood
Colcheſter
Sydenham
Carrickfergus
* Bagniers

Theſe waters are impregnated with ſea ſalt, and alſo with a purging ſalt; either the ~~calcareous Glauber's~~, or the *Epſom.*

They differ in ſtrength; ſome of them purge ſufficiently in the quantity of a pint; while two, three, four, five, or ſix pints of others are neceſſary to produce that effect. Some again are ſo weak as to require the addition of Glauber's ſalt, or other purgative.

Given in ſmall quantities they act as diuretics and alteratives.

They are good in ſcrophulous and ſcorbutic complaints, ulcers, and other diſeaſes which make their appearance on the ſkin, and are likewiſe uſed as baths, and fomentations in theſe and other diſorders.

The virtues of the preceding claſs of waters depend in a great meaſure on the preſence of their *fixed air*. The waters of the preſent claſs ſeem to derive their virtues principally from the ſaline matters which they contain.

7. VITRIOLIC WATERS.

Shadwell
Weſtwood
Swanzy
Haigh
Vahls
Hartfel
Croſs-town
Nobber
Caſhmore
Kilbrew.

Theſe waters are impregnated with green vitriol or copperas, and ſtrike a black colour with galls.

They are chiefly uſed outwardly for waſhing old ſores and the like, and frequently with good effect. In ſome caſes, however, they are taken inwardly in ſmall doſes, and then they prove emetic and purgative.

8. WATERS WHICH CONTAIN AN EARTH.

Newton-dale
Bale
Knareſborough
Glavely
* Briſtol
* Buxton
* Mallow.

The cold waters of this claſs have a petrifying quality. The virtues of the waters of this claſs being different, the reader is referred to the reſpective articles in the alphabet for an account of them.

The above arrangement of mineral waters is intended more for the convenience of the reader not verſed in phyſic, than as a *ſyſtematical* one.

Had the latter idea been adopted, it would have been neceſſary perhaps to have made a diviſion of the waters into *hot* and *cold*, in imitation of the learned Dr. Donald Monro; from whoſe ingenious work, together with thoſe of Dr. Short, Dr. Rutty, and a few others, the following treatiſe has been chiefly compiled. †

There are a great number of *cold* mineral waters in England; but the number of the *hot* ones is very ſmall. In the above catalogue, the *latter* are diſtinguiſhed from the *former* by having an ASTERISM placed before them. Thoſe of greateſt note on the continent however are alſo noticed; in many parts of which they abound.

The cauſe of the heat of thoſe waters is, in ſome inſtances, ſubterraneous fire; as is the caſe with ſome which are ſituated near volcanos. In other caſes the heat ariſes from the mineral ingredients with which they are impregnated in their paſſage. And the ſame may be ſaid of thoſe waters which are *cooler* than the common temperature of the atmoſphere. Thus it is known, that quick-lime, the pyrites ſtone, and other ſubſtances, thrown into water will make it *warm*. On the contrary, ſalts of various kinds make it *colder* than before.

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† The quantity of waters to be drank, and ſome other particulars, are not always mentioned by authors, but they may eaſily be learnt on the ſpot

The *warm* waters poſſeſs many of the virtues and properties of *cold* waters of the ſame claſs, and which are impregnated in the ſame manner; but they are preferable in many caſes, as from their warmth they are more kindly and agreeable to the ſtomachs of weak people, and promote perſpiration.

The warm waters are alſo uſed as warm baths, and may in general be conſidered as warm medicated baths; and theſe by relaxing the fibres, are of uſe in a variety of diſorders which take their riſe from rigidity, and from ſpaſm, as alſo from other cauſes. Hence their great uſe in rheumatiſms, inflammations, coſtiveneſs, &c. The cure is uſually aſſiſted by the internal uſe of thoſe waters at the time.

For complaints of a particular part of the body, either the part is fomented with the warm water, or the water is raiſed to an height by pumps, or otherwiſe, and then let fall with force on the diſeaſed part; this is called *pumping* by the Engliſh; the French term it the *Douche*.

Contrivances are alſo uſed for raiſing theſe waters into *vapour* or *ſteam*, and confining it ſo that it may be applied to the whole body, or to particular parts. Theſe contrivances are called *vapour baths.*

Baths are likewiſe made of the mud found at the bottom of theſe waters; and they have been found ſerviceable in removing pains, and achs; and paralytic, and other complaints. The mud is either rubbed on the part, or the part is immerſed in it, as may be judged convenient or proper; when it is collected in quantity in a reſervoir for theſe purpoſes, it is called the *mud bath.*

The cold waters are alſo, in ſome caſes, uſed externally.

I ſhall conclude this introduction by mentioning ſome of the moſt obvious methods of analyzing, or diſcovering the nature of mineral waters.

1. Waters are known to contain *iron,* by their exhibiting a purple or black colour with the infuſion of galls; and the quantity of iron which they contain, that is, their ſtrength as chalybeate waters, is determined by the deepneſs of the colour; the quantity and ſtrength of the infuſion being the ſame. If the iron be held in ſolution by

fixed air, the latter will fly off on expoſing the water in an open veſſel, and then the iron will fall to the bottom in the form of a yellowiſh or reddiſh brown powder, or *oker*. But if the iron be held in ſolution by the vitriolic acid, in the form of green vitriol, or copperas, this precipitation of oker does not take place. The chalybeate water may alſo be known to be vitriolic by its auſtere ſtyptic taſte.

2. If, on the addition of ſyrup of violets to a water, it turns to a *bright green*, it ſhews that an alkaline ſalt is contained in the water, and the only alkaline ſalt ever found in mineral water is the *foſſil*.

When this kind of water, however, is firſt taken up from the well, the alkaline ſalt is uſually ſaturated with fixed air, and therefore does not change ſyrup of violets green. It is frequently even *ſuper-ſaturated* with fixed air, and therefore turns the ſyrup red. But the air ſoon flies off on expoſure, and then the effect is as above-mentioned, the water is alſo found ſofter than common water, and lathers better with ſoap.

But earthy and metallic ſubſtances alſo change ſyrup of violets green. To be certain therefore that it is the foſſil alkali, add a little fixed alkaline ſalt, and if no powder falls to the bottom, and the water does not become turbid, it may be concluded that it is the *foſſil alkali* with which the water is impregnated.

3. If on the addition of ſyrup of violets a *red* colour is obſerved, the water contains an *acid.* Thus, fixed air is an acid, and when waters which are ſtrongly impregnated with fixed air, are firſt taken up from the fountain, they are found to change ſyrup of violets red. As the air flies off, however, this redneſs diſappears, and if the water alſo contained an alkali, it will, on the further eſcape of the fixed air, turn green, for the reaſon given in the laſt article.

4. If water contains *ſea ſalt,* oil of vitriol dropt into it will cauſe *white noxious fumes* to ariſe; which is the acid of the ſea ſalt, whoſe place the vitriolic acid had taken in the alkaline baſis of the ſea ſalt.

If a ſufficient quantity of the oil of vitriol be added, and the water be evaporated, not ſea ſalt but a true Glauber's ſalt will remain behind.

Alſo the reſiduum of theſe waters crackles and flies when placed on a red-hot iron.

5. If a mineral water contains that kind of purging ſalt, which the chemiſts call *calcareous Glauber's*, or the *Epſom* ſalt, (the purging ſalts uſually found in mineral waters) a ſolution of fixed alkali added will make the water turbid, and the earthy baſis of the ſalt will fall to the bottom in form of a white powder.

6. Sulphureous waters are known by their ſmell, and by their changing ſilver of a reddiſh copper colour.

7. If water contains an earth deprived of fixed air, it may be diſcovered by adding fixed air to it; for then the water will become turbid, and the earth will fall to the bottom. If, on the contrary, it contains an earth ſuperſaturated with fixed air, * drawing

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* There is a famous water of this kind, in Rathbone-place, London.

ing part of it away by the air pump, or expoſing the water to the air, or to warmth, will alſo precipitate the earth.

Waters in general contain ſeveral kinds of theſe ſolid matters, and therefore more than one of theſe methods are to be employed in detecting them.

8. Water may be known to contain fixed air by its ſparkling on being poured from one veſſel to another, by the exploſion which follows on its being ſhook in a phial half filled with it, and by the bubbles which ariſe when placed over the fire, long before it is hot enough to boil.

The ſolid matters contained in waters may alſo be known by evaporating the waters and examining their reſiduums. But as this requires ſome knowledge of chemiſtry, it need not here be entered upon; the deſign of this treatiſe being rather to deſcribe the medicinal virtues of mineral waters than their contents.

AN ACCOUNT OF THE MEDICINAL VIRTUES, &c. OF MINERAL WATERS.

ABCOURT,

Near St. Germains, four leagues from Paris.

IT is a briſk chalybeate water, impregnated with fixed air, and the foſſil alkali; and reſembles the waters of *Spaw* and *Ilmington*.

ABERBROTHOCK,

In Scotland.

It is a chalybeate water, ſimilar to thoſe of *Peterhead* and *Glendy*.

ACTON,

ACTON,

Near London, in the County of Middleſex.

The wells are much frequented in May, June, and July.

The water is clear, and without ſmell. But its taſte is ſomewhat bitteriſh like a ſolution of Epſom ſalt.

It contains a purging ſalt, together with ſea ſalt.

It is one of the ſtrongeſt purging waters about London; and is noted for cauſing a great ſoreneſs in the fundament.

AGHALOO, or APHALOO,

In the County of Tyrone, Ireland.

It is a ſulphureous water of the ſame kind with that of *Swadlingbar*, but ſtronger. Like that, it is alſo impregnated with the foſſil alkali, and a ſmall quantity of purging ſalt.

AIX-LA-CHAPELLE*,

In the Duchy of Juliers, Germany.

This place has long been famous for its hot ſulphureous waters and baths. They ariſe

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* My friend, the ingenious Dr. Simmons, F.R.S. who made many experiments on the waters during his reſidence at this place, has favoured me with an account of their ſeveral temperatures, as repeatedly obſerved by himſelf, with a thermometer conſtructed by Nairne.

The ſpring which ſupplies the Emperor's bath *(Bain de l'Empereur)* the New Bath *(Bain Neuf)* and the Queen of Hungary's bath *(Bain de la Reine de Hongrie)*	127°
St. Quirin's bath *(Bain de St. Quirin)*	112°
The Roſe bath *(Bain de la Roſe)* and the Poor's bath *(Bain des Pauvres)* both which are ſupplied by the ſame ſpring	112°
Charles's bath *(Bain de Charles)* and St. Corneille's bath *(Bain de St. Corneille)*	112°
The ſpring uſed for drinking is in the High Street, oppoſite to Charles's bath; the heat of it at the pump is	106°

ariſe from ſeveral ſources, which ſupply eight baths conſtructed in different parts of the town.

Theſe waters near the ſources are clear and pellucid; and have a ſtrong ſulphureous ſmell reſembling the waſhings of a foul gun; but they loſe this ſmell by expoſure to air. Their taſte is ſaline, bitter, and urinous. They do not contain iron. They are alſo neutral near the fountain, but afterwards are manifeſtly, and pretty ſtrongly alkaline, inſomuch that cloaths are waſhed with them without ſoap.

The heat of theſe waters is upwards of 100 degrees of Fahrenheit's thermometer.

They are at firſt nauſeous and harſh, but by habit become familiar and agreeable. At firſt drinking alſo they generally affect the head.

Their general operation is by ſtool and urine, without griping or diminution of ſtrength; and they alſo promote perſpiration.

The quantity to be drank as an alterative, is to be varied according to the conſtitution, and other circumſtances of the patient. In general, it is beſt to begin with a quarter, or half a pint in the morning, and encreaſe the doſe afterwards to pints, as may be found convenient. The water is beſt drank at the fountain. When it is required to purge, it ſhould be drank in large and often repeated draughts.

In regard to bathing, this alſo muſt be determined by the age, ſex, ſtrength, &c. of the patient, and by the ſeaſon. The degree of heat of the bath ſhould likewiſe be conſidered. The tepid ones are in general the beſt, though there are ſome caſes in which the hotter ones are moſt proper. But even in theſe it is beſt to begin with the temperate baths, and encreaſe the heat gradually.

Theſe waters are efficacious in diſeaſes proceeding from indigeſtion, and from foulneſs of the ſtomach and bowels. In rheumatiſms; in the ſcurvy, ſcrophula, and diſeaſes of the ſkin; in hyſteric, and hypochondriacal diſorders; in nervous complaints and melancholy; in the ſtone and gravel; in paralytic complaints; in thoſe evils which follow an injudicious uſe of mercury, and in many other caſes.

They ought not however to be given in hectic caſes where there is heat and fever, in putrid diſorders, or where the blood is diſſolved, or the conſtitution much broken down.

ALFORD, or AWFORD,

In Somerſetſhire, about 24 *miles ſouthward of Bath.*

This ſalt ſpring was diſcovered in 1670, from the pigeons which flew thither in great numbers to drink the water: thoſe birds being known to be fond of ſalt.

It contains a purging ſalt, together with a portion of ſea ſalt.

It is ſtrongly purgative.

It is recommended as cooling, cleanſing, and attenuating. As a good remedy in the ſcurvy, jaundice, and other glandular obſtructions. It alſo promotes urine and ſweat, and therefore is good in gravelly and other diſorders of the kidnies and bladder; and in complaints ariſing from obſtructed perſpiration.

ALKERTON,

In Glouceſterſhire, near the City of Glouceſter.

It is a purging water, of the nature of thoſe of *Dulwich*, and *Epſom*.

ANADUFF,

In the County of Leitrim, Ireland.

It is a ſulphureous water, of the ſame kind with thoſe of *Killaſher* and *Drumaſnave*, but weaker.

ANTONIAN.

See *Tonſtein.*

ASHWOOD,

In the County of Fermanagh, Ireland.

It is a ſulphureous water; and contains the foſſil alkali, with a ſmall quantity of purging ſalt.

In its virtues it reſembles the waters of *Drumgoon* and *Swadlingbar*.

ASKERON,

Five Miles from Doncaſter, in Yorkſhire.

It is a ſtrong ſulphureous water, and is ſlightly impregnated with a purging ſalt.

It is recommended internally and externally in ſtrumous and other ulcers, ſcabs, leproſy, and ſimilar complaints.

It is good in chronic obſtructions, and in caſes of worms and foulneſs of the bowels.

It operates by ſtool and urine.

ASTROPE,

Near Banbury, in Oxfordſhire.

It is a briſk, ſpirituous, pleaſant taſted chalybeate water, and is alſo gently purgative.

It ſhould be drank from three to five quarts in the forenoon.

It is recommended as excellent in female obſtructions, the gravel, hypochondriac, and ſimilar diſorders.

ASWARBY,

Seven Miles from Grantham, in Lincolnſhire.

It is a fine blueiſh chalybeate water, and is gently laxative without occaſioning griping or faintneſs, or a pain in the fundament; which is a common effect of waters impregnated with ſea ſalt. In its virtues it reſembles the *Cheltenham* water.

H ATHLONE,

ATHLONE,

In the County of Roſcommon, Ireland.

It is a chalybeate water, without colour or ſmell, but it will not keep.

It operates by urine, and is gently laxative. It ſeems to reſemble the *Hartlepool* water.

AYLESHAM,

In the County of Norfolk.

It is a light chalybeate water, ſimilar to that of *Iſlington.*

BADEN,

In Auſtria, Germany.

The waters are warm and ſulphureous, and have been recommended in thoſe diſorders in which the *Bareges* and *Aix-la-Chapelle* waters have been found ſerviceable. They are particularly ſpoken of for the cure of gun-ſhot wounds, and the complaints which remain after them.

BADEN BADEN,

In Swabia, Germany.

There are a number of hot ſulphureous ſprings and baths in and near this place, which have the ſame general virtues as thoſe of *Aix-la-Chapelle* and *Bareges*. Taken inwardly they are alſo gently laxative.

BAGNIGGE WELLS

PURGING WATER.

It is ſituated on the north-eaſt ſide of London, near Iſlington, and is much frequented in the ſpring.

It is a ſalt purging water.

Its virtues are ſimilar to thoſe of Pancras and Acton.

The doſe is from a pint to a quart. But it is uſually quickened with Glauber's, or other ſalts.

The CHALYBEATE WATER.

It is clear when it comes from the pump, and has a ſlight irony taſte.

When firſt taken to the quantity of three or four glaſſes, it is uſually purgative. But this effect does not continue after the inteſtines are cleared of their vitiated contents.

In its virtues it reſembles the *Orſton* and other ſimilar chalybeates.

BALEMORE.

See *Ilmington.*

BALL, or BAND-WELL,

In Lincolnſhire.

It reſembles the *Dropping-Well* water. Four or five half pints are reckoned a ſufficient doſe.

BALARUC,

In Languedoc, France.

The waters of this place are hot, and gently purgative. They have been uſed in many diſorders for which ſalt purging waters are preſcribed.

As they are hot, they have alſo been found particularly uſeful in caſes where warm baths are proper, to aſſiſt the operation of ſuch waters.

Hence they have been found particularly uſeful in palſies and rheumatiſms, in ſcrophulous, and many other diſorders.

BALLYCASTLE,

In the County of Antrim, Ireland.

It is a chalybeate water, ſomewhat of the nature of thoſe of *Iſlington* and *Hampſtead*; only it has a fœtid ſmell.

BALLYNAHINCH,

In the County of Down, Ireland.

It is a very clear, cold, chalybeate and ſulphureous water, and is good in ſcorbutic and cutaneous diſeaſes, in loſs of appetite, &c.

BALLYSPELLAN,

Eight Miles from Kilkenny, in Ireland.

It is a light chalybeate water, ſimilar to thoſe of *Iſlington*, and *Hampſtead*.

BAGNIERS,

In the Bigorre, France.

At this place are a variety of warm baths, which are uſed in the ſame diſorders as thoſe of *Aix-la-Chapelle*.

The waters of ſome ſprings taken internally are diuretic, and others purgative.

BAREGES.

In the Bigorre, France.

There are ſeveral ſprings of hot ſulphureous water at this place, which form four baths.*

The water is at firſt clear; but by ſtanding throws up a thin pellicle, reſembling a fine light oil. It has a ſlight ſulphureous ſmell, like that of eggs boiled hard. It has a ſoft and ſomewhat nauſeous taſte, and feels ſoft, like ſoap-water, or oil. Its volatile parts fly off on expoſure to the air; and it is beſt drank at the fountain head.

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* Dr. Simmons informs me, that on plunging his thermometer into the hotteſt ſpring the mercury roſe to 112°.

This water operates by perſpiration, and by urine; but ſeldom by ſtool. The doſe is uſually a quart, or three pints.

It is alſo uſed as a bath; as a fomentation; and as a douche.

The Barages waters have been recommended in a variety of diſorders; in rheumatiſms, palſies, convulſions, cutaneous eruptions, the gout, ſcurvy, &c. Alſo in wounds, ulcers, hard tumours; and they are ſaid to have been efficacious in old gunſhot wounds, and in hard knots in the urethra after venereal complaints.

BARNET AND NORTH-HALL.

The *former* ſpring is ſituated at Eaſt Barnet in Hertfordſhire.

The *latter* lies about three miles north of High Barnet.

They are both purging waters, ſomewhat of the nature of *Epſom* water, but much weaker. That of *Barnet* is the ſtrongeſt of the two.

BARROWDALE.

The Spring is about three Miles from Keſwick in Cumberland.

It is a ſalt water, and much of the nature of that of the ſea, but ſtronger.

It is a briſk and rough purge even to ſtrong conſtitutions, occaſioning great thirſt, and heating the body. A pint is uſually ſufficient for a doſe.

Taken in leſs quantity (half, or a quarter of a pint) it operates by urine.

It is of excellent uſe in ſcorbutic complaints, in the King's evil, and the leproſy. It is alſo powerful in removing chronic obſtructions; in clearing the blood of acrimonious humours; in diſeaſes in the ſkin; and in all thoſe complaints in which ſea water is ſerviceable. Like that alſo it may be uſed externally by way of fomentation or bath. See *Sea Water*.

BATH,

In Somerſetſhire.

This place has long been famous for its warm chalybeate waters. There are ſeveral ſprings, but their waters are all of the ſame nature. There are ſix baths, but the principal are the *King*'s bath, the *Queen*'s bath, and the *Croſs* bath. The others are only appendages to theſe. They are not equally hot.

The water when viewed in the baths has a greeniſh, or ſea colour: but in a vial it appears quite tranſparent and colourleſs, and it ſparkles in the glaſs.

It has a very ſlight ſaline, bitteriſh, and chalybeate taſte, which is not diſagreeable, and ſometimes ſomewhat of a ſulphureous ſmell; but this latter is not uſually perceivable,

ceivable, except when the baths are filling.

As it riſes from the pump, it contains fixed air, or other volatile acid, in a ſufficient quantity to curdle milk and diſſolve iron. It is alſo ſlightly impregnated with ſea ſalt.

The Bath water operates powerfully by urine, and promotes perſpiration. If drank quickly, in large draughts, it ſometimes purges; but if taken ſlowly and in ſmall quantity, it rather has the contrary effect. An heavineſs of the head, and inclination to ſleep, are often felt on firſt drinking it.

This water when taken inwardly gives a briſk ſtimulus to the nerves and fibres, and ſeems to give new life and vigour to the whole frame. It alſo powerfully corrects putreſcent acrimony. Hence when taken into the ſtomach it is ſaid to dilute and blunt whatever putreſcent humours it meets with; while its briſk, volatile chalybeate principles ſtimulate and increaſe the tone of the ſtomach and bowels, and brace up their fibres and nerves. Entering the circulation, they pervade the minuteſt veſſels; dilute, blunt, and correct thoſe fluids in the blood which are too putreſcent; encreaſe the action of the whole vaſcular ſyſtem to promote the circulation through the ſmalleſt veſſels; to break down groſs humours; to remove obſtructions; and to promote ſecretions of the ſkin and kidnies; for carrying off thoſe fluids that are unfit to circulate longer in the general maſs. And hence it is that they have been found ſo ſerviceable in ſuch a variety of diſorders. In female complaints, for example; ſuch as obſtructions of the menſes; barrenneſs proceeding from obſtruction and relaxation of the womb; the fluor albus, &c. In hyſteric and hypochondriacal diſorders; in complaints of the ſtomach and bowels proceeding from weakneſs and laxity, or from putreſcent humours. In pains of the ſtomach, attended with bad digeſtion, and in many cholicky and other diſorders of the ſtomach and bowels. In diſorders of the head and nerves; ſuch as palſies, epilepſies, convulſions, &c. In diſeaſes of the ſkin; the ſea ſcurvy; leproſy. In obſtructions of the liver, ſpleen, and other bowels; in gouty and rheumatic complaints; in the ſtone and gravel; and in many other diſeaſes.

Theſe waters being of an heating nature, it is uſual, previous to a courſe of them, to cool the body by gentle purges, by a low diet, and, if found neceſſary, by bleeding.

They may be drank from half a pint, to two, three, or four pints in a day, according to circumſtances. The beſt method is to take one, two, three, or four half glaſſes at proper intervals in the morning; a glaſs or two an hour before dinner; and as much about the ſame time before ſupper. The patient in the mean time ſhould live upon a light diet, eaſy of digeſtion; to uſe proper exerciſe; to go early to bed; and riſe betimes in the morning.

In ſome caſes, however, theſe waters are hurtful. In hectic fevers, for example; in ſuppurations of the lungs; in fits of the gout; and in the rheumatiſm if inflammatory; and indeed in all caſes of inflammation; as alſo where the action of the fibres is already

ready too ſtrong, the animal heat too great, and the blood thick and ſizy.

The quantity of the waters drank in a day ſhould be gradually encreaſed to as much as the patient can bear; and after continuing that quantity a ſufficient time, it ſhould be as regularly diminiſhed. The courſe may be continued for a month or ſix weeks.

The uſual ſeaſon for the Bath waters is in April, May, and June; and in Auguſt, September and October.

Theſe waters are alſo uſed externally in a variety of diſorders, and with good effect; and that either by bathing or pumping, as occaſion may require, eſpecially if uſed inwardly at the ſame time. Foreſts of crutches left there, are an ample teſtimony of the efficacy of bathing in paralytic caſes. By ſoftening and relaxing the parts, and at the ſame time giving a gentle ſtimulus, they are alſo of ſervice in removing many inveterate gouty and rheumatic complaints. In diſeaſes of the limbs, &c. ariſing from obſtructions; in ſprained, relaxed, and ſtiff joints; in ſcorbutic and cutaneous diſeaſes, old ſores and ulcers, and in many other caſes; and when the complaint is local, pumping is generally preferred to bathing.

It is a certain effect of theſe and other baths, to throw out a redneſs and kind of eruption on the ſkin, eſpecially in thoſe who are ſcorbutic, &c. But this effect diſappears by their continued uſe, and the diſorders themſelves are at length cured.

The mud and ſcum of theſe waters have alſo been applied with good effect by way of poultice in hard ſwellings, in weak joints, in contractions of the limbs, in ſcald heads, running ulcers, &c. and herbs are ſometimes boiled with them in the Bath water to a proper conſiſtence, for theſe and the like purpoſes.

BILTON,

Near Knareſborough, in Yorkſhire.

The water has a ſtrong ſulphureous ſmell, and taſtes ſomewhat ſaltiſh. It is colder than common water.

It contains the native alkaline ſalt, with a little ſea ſalt.

It acts as a gentle purge; and is ſomewhat ſimilar in virtue to the *Sutton Bog* water.

BINLEY,

Near Coventry, in Warwickſhire.

It is a chalybeate water, and alſo purgative and diuretic. It reſembles the *Scarborough* water, but is leſs purgative.

BIRMINGHAM,

In Warwickſhire.

Near to this place is a briſk chalybeate water, which ſeems to reſemble that of *Hampſtead* in *Middleſex.*

BORSET. ‡

About a Mile and half from Aix-la-Chapelle, Germany.

The waters are warm, and of the nature

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‡ The waters at this place, which is only about a mile from Aix-la-Chapelle, are diſtinguiſhed into the upper and

of thoſe of Aix-la-Chapelle; but they are only uſed as baths, for the diſeaſes in which the waters laſt mentioned are recommended, and alſo in dropſical and oedematous caſes.

BRABACH,

In the Diſtrict of Mengerſkirchen, in the Country of Naſſau, Germany.

It is a briſk ſpirity chalybeate water, which may be preſerved long in well-ſtopt bottles, though it ſoon ſpoils in the open air. It has a ſomewhat ſalt, ſulphureous, and aſtringent taſte, and contains the foſſil alkali.

It reſembles the German *Spa Water* in its general virtues.

and lower ſprings. The former were found by Dr. Simmons to raiſe the thermometer to 158°; the latter to only 127°. All the baths are ſupplied by the firſt. Dr. Simmons obſerved that theſe waters were much leſs ſulphureous than thoſe of Aix-la-Chapelle, probably on account of their greater heat. He likewiſe found that they abounded much with ſelenitis, which incruſt the pipe through which the water paſſes, and likewiſe the ſides of the bath.

BRANDOLA,

In Italy.

It is a ſlight chalybeate water, extremely limpid and chryſtalline, impregnated with an alkaline ſalt, and abounding in fixed air. It ſmells ſomewhat ſulphureous, and has an acidulous taſte.

It is commonly drank from two pints to a gallon or more in a day. It promotes urine and perſpiration, and is gently laxative.

Its virtues ſeem to reſemble thoſe of the *Iſlington* and *German Spaw* waters.

BRENTWOOD,

In Eſſex.

It is a purging water, of the nature of thoſe of Pancras, Epſom, and Dulwich.

BRISTOL,

In Somerſetſhire.

The ſprings are known by the name of the *Hot Wells*.

The water at its origin is warm, clear, pellucid and ſparkling; and if let ſtand in a glaſs, covers its inſide with ſmall air-bubbles. It has no ſmell, and is ſoft and agreeable to the taſte. It raiſes the thermometer from about ſeventy to eighty degrees. It contains an earthy matter, which is ſuſpended by means of fixed air, together with ſea ſalt, and a ſpecies of Glauber's ſalt. The quantities of theſe latter ingredients however are very ſmall.

It has been recommended in a variety of diſorders. In conſumptions and weakneſs of the lungs; in caſes attended with hectic fever and heat (in which, among other properties, they differ from the *Bath* water) in uterine and other internal hæmorrhages, and in immoderate diſcharge of the menſes; in old diarrhæas and dyſenteries; in the fluor albus; in gleets; in the diabetes; and in other caſes where the ſecretions are too much increaſed, and the humours too thin; in the ſtone and gravel; in the ſtrangury; in colliquative ſweats; in ſcorbutic and ſimilar caſes; in cholics; in the gout and rheumatiſm; in loſs of appetite and indigeſtion; and in many other diſeaſes.

The uſual method of drinking the water is a glaſs or two before breakfaſt, and about five in the afternoon. The next day three glaſſes before breakfaſt, and as many in the afternoon; and this is to be continued during the patient's ſtay at the Wells. A quarter or half an hour is allowed between each glaſs.

A courſe of theſe waters requires no preparation further than to empty the bowels by ſome gentle purge; and if heat or fever requires, to take away a few ounces of blood. Coſtiveneſs, however, ſhould be avoided during the courſe.

Externally they are uſeful in ſore and inflamed eyes; in ſcrophulous and cancerous ulcers; and in other ſimilar caſes.

This water is cooling and quenches the thirſt. It is beſt drank at the ſpring head; though it will bear carriage tolerably well.

BROMLEY,

In Kent.

It is a chalybeate water, reſembling thoſe of *Spaw*, *Iſlington*, and *Hampſtead.*

BROUGHTON,

In the Weſt Riding of Yorkſhire, near Coln, in Lancaſhire.

It is a ſtrong ſulphureous water; it turns ſilver and copper black; it reddens the leaves of trees, &c. and makes the bottom of its baſon black.

It is impregnated with ſea ſalt, and a purging ſalt; and its virtues are ſimilar to thoſe of the *Harrowgate* water.

BUCH,

Situated about a German Mile from the Caroline baths in Bohemia.

The waters have a briſk pungent taſte, and are plentifully impregnated with *fixed air.* This, on expoſure, flies off, and they become inſipid. In this they differ from *Seltzer*

Seltzer water, which acquires a lixivial taſte by ſtanding.

They contain, however, an alkaline ſalt; and therefore their virtues are ſimilar to thoſe of the *Tilbury* and *Seltzer* waters, but much weaker.

BUGLAWTON,

Near Congleton, in Cheſhire.

It is a ſulphureous water, impregnated with a purging ſalt, and in its virtues ſeems to reſemble the *Aſkeron* water.

It is intenſely cold, and has a pretty ſtrong ſulphureous ſmell and taſte.

BURLINGTON,

In Yorkſhire.

It is a briſk chalybeate water, and reſembles thoſe of *Scarborough* and *Cheltenham*, tho' it ſeems to be leſs purgative.

BOURNLEY, or BURNLEY,

In Lancaſhire.

It is a chalybeate water of the nature of the *Scarborough*, but leſs purgative.

BUXTON,

In Derbyſhire.

This is a hot water, reſembling that of *Briſtol.*

It has a ſweet and pleaſant taſte.

It contains the calcareous earth, together with a ſmall quantity of ſea ſalt, and an inconſiderable portion of a purging ſalt. But no iron can be diſcovered in it.

This water taken inwardly is eſteemed good in the diabetes; in bloody urine; in the bilious cholic; in loſs of appetite, and coldneſs of the ſtomach; in inward bleedings; in atrophy; in contraction of the veſſels and limbs, eſpecially from age; in cramps and convulſions; in the dry aſthma without a fever; and alſo in barrenneſs.

Inwardly and outwardly it is ſaid to be good in rheumatic and ſcorbutic complaints; in the gout; in inflammation of the liver and kidnies, and in conſumptions of the lungs; alſo in old ſtrains; in hard callous tumours; in withered and contracted limbs;

in the itch, ſcabs, nodes, chalky ſwellings, ring worms, and other ſimilar complaints.

Beſides the hot water, there is alſo a cold *chalybeate* water, with a rough irony taſte. It reſembles the *Cawthorp* water.

CANNOCK.

Near Stafford.

It is one of the beſt and lighteſt chalybeate waters in Staffordſhire. In its virtues it reſembles thoſe of *Hampſtead* and *Iſlington.*

CAPE CLEAR.

Situated in the moſt ſouthern part of Ireland.

It is a ſmooth, ſaltiſh water, and lathers with ſoap.

It contains an alkaline ſalt, together with a little ſea ſalt.

Its virtues are ſimilar to thoſe of the waters of *Tilbury* and *Clifton,* but weaker.

CARGYRLE,

In Wales.

The ſpring is ſituated about ten or twelve miles from Cheſter.

The water is of the nature of the *Barrowdale* water, but much weaker, ſeveral quarts being required to be taken for a purge.

CAROLINE BATHS,

At Carlſbad, in Bohemia, Germany.

The waters of this place are hot, and are impregnated with the foſſil alkali.

They are recommended externally and internally in female obſtructions. In relaxed habits. In glandulous obſtructions. In diſorders ariſing from viſcid fluids, and in a variety of other complaints; and it is ſaid, that they may be drank, and bathed in, by perſons of all ages and conſtitutions, with ſafety.

CARLTON,

Near Newark upon Trent, in the county of Nottingham.

It is chalybeate water, reſembling thoſe of *Iſlington* and *Hampſtead,* but it has a fœtid ſmell, like infuſion of horſe-dung.

CARRICKFERGUS,

In the county of Antrim, Ireland.

The water is of a bluiſh colour, and a very ſoft taſte at the fountain head.

It is weakly purgative; and muſt be drank to the quantity of two or three quarts.

CARRICKMORE,

In Ireland.

It is ſituated about five miles from Belturbet, in the county of Cavan.

The water has a ſoft, milky taſte, like Briſtol water; and putrifies by keeping.

It curdles a ſolution of ſoap; and with ſalt of tartar gives a white ſediment.

It contains an alkaline ſalt, together with a purging ſalt.

Its virtues therefore are ſimilar to thoſe of *Tilbury* and *Cliſton*.

CARSTARPHIN.

Two miles from Edinburgh, Scotland.

It is a weak ſulphureous water, ſlightly impregnated with ſea ſalt.

There is another ſpring, about a mile from Edinburgh, on the banks of the water of Leith.

They reſemble the *Moffat* water in virtues; and the latter is reckoned the ſtrongeſt.

CASHMORE.

In the County of Waterford, Ireland.

It is near the *Croſs-town* water, which it reſembles in virtues, though ſtronger.

CASTLECONNEL,

In the County of Limerick, Ireland.

It is a chalybeate water of conſiderable repute, and reſembles the German *Spaw* waters.

CASTLEMAIGN,

In the county of Kerry, Ireland.

It is a ſulphureous, and ſtrongly chalybeate water, and in its virtues ſeems to reſemble that of *Deddington.*

CAWLEY,

Near Dranefield, in Derbyſhire,

It is ſulphureous, and gently purgative; and reſembles the *Aſkeron* water.

CAWTHORP,

Four miles from Bourne, in Lincolnſhire.

It is a ſaltiſh chalybeate water, and foams much as it riſes from the ſpring.

It reſembles the *Tunbridge* water in virtues, but is ſaid to be more purgative; and is alſo a good corrector of acidities.

CHADLINGTON,

Near Chipping-Norton, Oxfordſhire.

The water has a ſaltiſh taſte, and ſmells like the waſhings of a foul gun.

It is one of the waters termed ſulphureous.

It contains alſo the foſſil alkaline ſalt, together with a little ſea ſalt.

It acts as a purgative; and its virtues reſemble thoſe of the *Sutton Bog* water.

CHAUDE FONTAINE.

About two leagues from Liege, and three from Spaw, in Germany.

The water of theſe ſprings is hot, and ſupplies fifty baths.

It is claſſed by authors with the ſulphureous waters; but Dr. Simmons,‡ who ſpent ſome time at this place in 1776 and 1777, informs me they have no ſulphureous ſmell; that they are impregnated with calcareous earth, and foſſil alkali, and alſo with fixed air.

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‡ The ſame gentleman informs me, that on the 5th of July 1777, when the mercury in his thermometer, in the ſhade, ſtood at 75°, it roſe in the bath to 92°.

They are not chalybeate; and therefore rather reſemble our *Briſtol* and *Buxton* than the *Bath* water.

Their virtues *externally* however may be collected from what has been ſaid of the *Aix-la-Chapelle* and *Bath* waters.

CHELTENHAM.

In Glouceſterſhire, ſix miles from Glouceſter.

It is one of the beſt and moſt noted purging chalybeate waters in England, tho' it is not ſo much frequented as formerly.

The doſe is from one pint to three or four. It operates with great eaſe, and is never attended with gripings, teneſmus, or ſtraining at ſtool. It is beſt taken a little warm.

It alſo creates an appetite; is excellent in ſcorbutic complaints, and has been uſed with ſucceſs in the gravel.

CHIPPENHAM,

In Wiltſhire.

It is a pretty ſtrong chalybeate water, reſembling thoſe of *Iſlington* and *Tunbridge.*

CLEVES,

In the Duchy of Cleves, Germany.

It is a briſk chalybeate water, and operates by urine. It reſembles the *Pyrmont* water.

CLIFTON,

This is a Village near Deddington in Oxfordſhire.

The well is about a furlong ſouth of Clifton. The water is clear, and has but little taſte.

The principal ingredient contained in it is the foſſil alkali.

Its virtues are ſimilar to thoſe of the *Tilbury* water, though in a leſs degree. But as it alſo contains a purging ſalt, it is more purgative than that.

It has been much uſed by way of bath in diſorders of the ſkin.

COBHAM,

In the County of Surry.

It is a chalybeate water, of the nature of that of *Tunbridge*, but rather ſtronger of the iron.

CODSALWOOD,

Five Miles from Wolverhampton, Staffordſhire.

It is a ſtrong ſulphureous water.

In its virtues it ſeems to reſemble the *Aſkeron* water.

COLCHESTER,

In the County of Eſſex.

It is a purging water of the nature of thoſe of *Acton* and *Epſom.*

COLURIAN,

In the Pariſh of Ludgvan, in Cornwall.

It is a chalybeate water, and ſeems to reſemble thoſe of *Hampſtead* and *Iſlington.*

COMNER, or CUMNER,

In Berkſhire, four miles weſt of Oxford.

The water is of a whitiſh colour, eſpecially in the ſummer.

It is purgative, and may be drank to the quantity of one, two, or three quarts, according to the patient's conſtitution.

COOLAURAN,

In the county of Fermanagh, Ireland.

It is a chalybeate water, reſembling that of *Peterhead*, but weaker.

COVENTRY,

In Warwickſhire.

It is a chalybeate and purging water, which ſits eaſy upon the ſtomach, ſoon paſſes off, raiſes the ſpirits, and creates an appetite.

In its general virtues it reſembles the *Scarborough* and *Cheltenham* waters.

CRICKLE SPAW,

Situated near Broughton, in Lancaſhire.

It is a ſtrong ſulphureous water, impregnated with ſea ſalt.

It is purgative; and in its virtues reſembles the *Harrogate* water.

CROFT,

In the North Riding of Yorkſhire, on the confines of Durham.

This is a ſtrong ſulphureous water, weakly impregnated with a purging ſalt.

It is clear and ſparkling, and its ſtream does not riſe or fall by rain or drought.

It is purgative, and of the nature of the *Aſkeron* water; and is ſaid to have performed remarkable cures.

CROSS-TOWN,

Near the Town of Waterford, Ireland.

It reſembles the *Hartfell* water in Scotland.

This water vomits ſome, purges others, and with others operates by urine.

It ſeems at ſome times to contain a greater quantity of acid than at others.

CUNLEY HOUSE,

Near Whaley, in Lancaſhire.

It is ſtrongly ſulphureous, and gently purgative, and ſeems to reſemble in its virtues the *Aſkeron* water.

DAS WILD-BAD,

Within the Walls of the Town of Nuremberg, Germany.

It is a chalybeate water, with a ſubaſtringent taſte, and contains alſo a ſaline matter.

It has been recommended in obſtructions of the viſcera, and in female complaints.

D'AX EN FOIX,

About fifteen leagues weſt of Thoulouſe, France.

This place abounds with hot ſulphureous waters of different temperatures. They are recommended as baths, or otherwiſe, in thoſe complaints in which the *Aix-la-Chapelle* and *Bareges* waters are ſerviceable.

DEDDINGTON,

This is a ſulphureous chalybeate water; but ſoon loſes its ſulphureous ſmell by keeping.

Drank in large quantities it is purgative; and in leſs doſes as an alterative, it is good in ſcorbutic and cutaneous diſorders.

DERBY,

Near to the Town of Derby, in Derbyſhire.

It is a chalybeate water of the nature of that of *Tunbridge*, but ſeems to be ſtronger.

DERRINDAFF,

In the County of Cavan, Ireland.

This is a ſulphureous water, impregnated with a purging ſalt.

Its virtues reſemble thoſe of the *Aſkeron* water.

DERRYHENCE, or DERRYINCH.

In the County of Fermanagh, Ireland.

The water is ſulphureous.

It contains alſo the foſſil alkali, and reſembles in its virtues the waters of *Drumgoon* and *Swadlingbar*.

DERRYLESTER,

In the County of Cavan, about three Miles from Swadlingbar, Ireland.

The water is of the nature of that of *Swadlingbar*, but ſtronger.

DOG AND DUCK;

A noted tea-drinking houſe in St. George's Fields, near London; and in the ſpring and ſummer months the waters are much reſorted to.

The water is clear, and has but little taſte.

It is a mild purgative, and may be drank to the quantity of ſeveral pints. Moſt frequently, however, it is quickened by the addition of Glauber's, or other purging ſalts.

It is of uſe in ſcrophulous complaints, leproſies and diſeaſes of the ſkin; and is alſo ſaid to prevent the return of cancerous diſeaſes. For theſe complaints it may be uſed both internally and externally.

It is cooling and diuretic; and may be given freely to young people of robuſt conſtitutions. But it cools and relaxes people in years and of weak habits too much. It is alſo apt to bring on or encreaſe the fluor albus in weakly women.

DORTSHILL,

Near Litchfield, in Staffordſhire.

The water is a briſk chalybeate, ſimilar to that of *Tunbridge.*

There is alſo a ſaline purging water of the nature of the *Barrowdale* water, but weaker.

DRIG WELL,

Near Revenglas, in Cumberland.

This is a briſk, ſpirituous, ſulphureous chalybeate; and in its virtues reſembles the *Deddington* water.

DROPPING WELL,

At Knareſborough, in Yorkſhire.

It is very cold, limpid, and ſweet taſted and in time petrifies ſubſtances thrown into it.

In its virtues it reſembles the *Newton Dale* water. The doſe has formerly been ſeveral quarts in the day; but three or four half pints are now judged ſufficient.

Its uſe ſhould be preceded by a doſe or two of rhubarb.

DRUMASNAVE,

Called likewiſe Mount Campbell, in the County of Leitrim, Ireland.

This is one of the ſtrongeſt ſulphureous waters in Ireland, as is ſhewn by its quick and ſtrong effect in diſcolouring metals.

It is perfectly clear and limpid in common; but before rain becomes white.

It contains the foſſil alkali, with a ſmall quantity of purging ſalt.

It operates powerfully by urine, and purges ſome conſtitutions, but is ſaid to render others coſtive.

DRUMGOON,

In the County of Fermanagh, Ireland.

The water has a ſtrong ſulphureous ſmell, and tinges ſilver of a copper colour in a few minutes. It alſo depoſits a black ſediment at the bottom of the well.

It contains the foſſil alkali, with a little ſea ſalt.

It is recommended for the cure of cutaneous and ſcrophulous diſorders; and for worms.

There are two other ſulphureous ſprings in the neighbourhood; the one nearly reſembles this; the other is more of a purgative nature.

DUBLIN SALT SPRINGS.

There are five of thoſe Springs in Francis Street, *and one in* Thomas's Court.

The waters are ſalt, and of the nature of *Barrowdale* water. For a purge, they muſt be taken to the quantity of ſeveral pints. They operate without griping.

DULWICH,

The Spring is ſituated between Dulwich and Lewiſham, in the County of Kent.

The water is clear, and has a brackiſh taſte, leaving a bitterneſs in the throat.

It contains a purging ſalt, together with ſea ſalt.

This is a celebrated purging water; is alſo diuretic; and is recommended in a variety of diſorders.

It is particularly of uſe in complaints ariſing from obſtructions; as thoſe of the liver, ſpleen, and other viſcera.

It is recommended in the green ſickneſs, the jaundice, the ſcurvy, in difficulty of urine, and in gravelly complaints.

It is ſaid to ſtrengthen the ſtomach, and create a good digeſtion.

It is alſo ſaid to ſtrengthen the nervous ſyſtem, and therefore to be ſerviceable in palſies, apoplexies, and other nervous diſorders.

orders. In theſe caſes it is beſt taken warm.

The courſe of drinking this water is uſually twenty days. Three pints a day are to be drank at firſt; it ſhould be encreaſed to eight pints by the tenth day, and afterwards decreaſed in the ſame manner.

A new ſpring has ſince been diſcovered; whoſe virtues are ſimilar to thoſe of the old one, but it is ſtronger.

DUNNARD,

About eighteen miles from Dublin.

This is a chalybeate water, reſembling that of *Peterhead*, but weaker.

DUNSE,

In Scotland.

It is a chalybeate water, ſimilar to that of *Tunbridge*.

DURHAM.

The ſpring is ſituated near Durham, on the north ſide of the river Ware.

It is a ſtrong ſulphureous water, and is alſo impregnated with ſea ſalt.

In its virtues it reſembles the *Harrogate* water.

Near to this, in the middle of the river, is a ſalt ſpring, which is drank as a purging water.

EGRA,

In Bohemia.

This is a ſpirity chalybeate water, and operates both by ſtool and urine. It contains leſs fixed air than the *Pyrmont* water, but is more purgative, and ſeems rather to reſemble our *Scarborough* and *Cheltenham* waters.

EPSOM,

In Surry, about ſixteen miles from London.

The water has a ſlight ſaline taſte, is clear, and without ſmell. But if it be kept in covered veſſels for ſome weeks in the ſummer it will ſtink, and acquire a nauſeous and ſaltiſh bitter taſte.

This was the firſt water from which the bitter purging ſalt (thence called *Epſom ſalt)* was obtained. But the ſalt uſually ſold by that name is different from that yielded by the Epſom water, though perhaps not inferior in virtue. It is made from the bittern left after the chryſtallization of common ſalt from ſea water.

The Epſom water is purgative; for which purpoſe it muſt be drank to the quantity of two or three pints. It alſo operates by urine.

Taken in leſs quantity (about the third part of a pint three times a day) it is a mild alterative, and good in thoſe complaints for which the *Acton* and *Pancras* waters are recommended.

It is likewiſe eſteemed good for waſhing old ſores.

FELSTEAD,

In Eſſex.

The ſpring is ſituated at the bottom of a rock. The water is a light chalybeate, reſembling that of *Iſlington.*

FILAH,

Near Scarborough, in Yorkſhire.

This is a ſalt chalybeate water, and is uſed by the common people as a purgative; for which purpoſe they drink to the quantity of ſeveral quarts; it alſo operates by urine.

FRANKFORT,

In Germany.

There are two ſtrong ſulphureous waters in the neighbourhood of Frankfort on the Maine.

The one is called FAULPUMP,

The other FONS SCABIOSORUM.

They are alſo impregnated with ſea ſalt, and are of the nature of the *Moffat* and *Harrogate* waters.

GAINSBOROUGH,

In Lincolnſhire.

This is a weak ſulphureous chalybeate water, ſimilar to that of *Deddington.*

GALWAY,

In the county of Galway, Ireland.

It is a chalybeate water, of the nature of that of *Tunbridge.*

GLANMILE,

Near Naul, in Ireland.

It is a chalybeate water, reſembling that of *Peterhead,* but weaker.

GLASTONBURY,

In Somerſetſhire.

This water is of the ſame nature with thoſe of *Tilbury* and *Clifton*; but weaker than either of theſe.

It has alſo a ſmall mixture of ſea ſalt.

It is naturally ſweet, but by keeping becomes putrid.

This water was formerly in great repute; and many ſuperſtitions were held concerning it; but it has not lately been eſteemed.

Its virtues may be collected from what is ſaid of *Tilbury* water.

GLENDY,

In the County of Mairns, Scotland.

This is a ſtrong chalybeate water, little inferior to that of *Peterhead.*

GRANSHAW,

Near Dunnaghadee, in the County of Down, Ireland.

It is a chalybeate water, of the nature of that of *Caſtle Connel.*

GUGGA,

See *Kuka.*

HAIGH,

Near Wigan, in Lancaſhire.

It is impregnated with green vitriol; and is of the nature of the *Shadwell* water; which ſee.

It works plentifully by vomit, and ſtool; and is excellent for ſtopping inward bleeding.

HAMPSTEAD,

This is a chalybeate water, of the nature of that of *Iſlington*, but ſomewhat ſtronger. The doſe is from half a pint to ſeveral pints.

It was formerly, and perhaps deſervedly, in great repute.

This water is better in the morning than in the middle of the day; and in cold weather it is much ſtronger than in hot.

HANBRIDGE,

In Lancaſhire.

It is a chalybeate water, of the nature of that of *Scarborough*, but leſs purgative.

HANLYS,

Near Shrewſbury, in Shropſhire.

The water is clear, and limpid, and has a ſaline and bitter, though not diſagreeable taſte.

It ſprings up with impetuoſity at the fountain; and does not change colour, or loſe its virtue, by being expoſed to the air.

It is purgative; and the doſe is from two to four half pints.

At this place there is alſo a *chalybeate water*. It is near to the purging water, and is of the nature of thoſe of *Scarborough* and *Landrindod*.

It is briſk and pungent to the taſte, and as it is taken from the fountain, clear, and not unpleaſant; but loſes its virtues by keeping.

HARROGATE,

Near Knareſborough, Yorkſhire.

There are four ſprings at this place, but the waters of all of them are nearly alike.

The water as it ſprings up is clear and ſparkling, and throws up a quantity of air bubbles.

It has a ſtrong ſmell of ſulphur, and is ſuppoſed to be the ſtrongeſt ſulphureous water in England.

It has a ſalt taſte, as it contains a conſiderable quantity of ſea ſalt, together with a little purging ſalt.

It is purgative; and the doſe required for this purpoſe is about three or four pints.

When drank in ſmaller quantities, it is a good alterative, and is found ſerviceable in the ſcurvy, king's evil, and diſeaſes of the ſkin. It may be uſed at the ſame time outwardly, by way of bath, or fomentation.

It has been found efficacious in deſtroying worms.

It has been recommended in the gout, jaundice, the ſpleen, the green ſickneſs, and other diſorders ariſing from obſtructions.

It is uſed externally for removing old aches, ſtrains, paralytic weakneſſes, and the like. Alſo for the cure of ulcers, ſcabs, the itch, &c.

N. B. Between *Harrogate* and *Knareſborough*, are alſo ſeveral *chalybeate* waters, which ſeem to reſemble thoſe of *Hampſtead* and *Iſlington*. The moſt remarkable are, *the Allum Well*, *the Sweet Spaw*, and *the Tuewhet Well*. The latter is the ſtrongeſt.

HARTFELL,

In the county of Annandale, Scotland.

It is impregnated with green vitriol, and reſembles the *Shadwell* water.

It is recommended in inward bleedings, in immoderate flux of the menſes, in dyſenteries, in bloody urine, in the fluor albus, in gleets, in complaints of the ſtomach and bowels, and in conſumptions.

The doſe is from a gill to a pint or two, taken at repeated draughts in the morning.

Externally, it cures itchy, and tetterous eruptions, and old ſores, eſpecially if taken at the ſame time as an internal remedy.

HARTLEPOOL,

In Durham.

This is a fine clear chalybeate water; with a ſlight ſulphureous ſmell, and pleaſant taſte.

It is alſo diuretic and laxative; and is recommended as excellent in ſcorbutic complaints, in bilious and nervous cholics, in pains of the ſtomach and indigeſtion, in the gravel, in female obſtructions, in the hypochondriacal diſeaſe, in cachexy, in hectical heats, and in recent ulcers.

HOLT,

Near Bradford, in Wiltſhire.

The water is limpid, and has but little taſte.

It contains a purging ſalt, together with a large quantity of earth.

On account of the latter ingredient, it is but a very mild purge, and two quarts are uſually required to produce any conſiderable operation this way.

Taken in leſs quantity it is alterative, and diuretic.

It is alſo good as a diluent, cooler, and ſtrengthener; and creates an appetite.

Externally, rags, or ſpunge dipt in it, are ſaid to cure ſcrophulous ulcers, attended with carious bones; an internal courſe being obſerved at the ſame time.

It is alſo of ſervice in old running ulcers of the legs, and other parts; in cutaneous foulneſſes, though attended with hot corroſive humours; in the piles, in cancerous ulcers, and in ſoreneſſes of the eyes. But in theſe caſes alſo it muſt be uſed both internally and externally.

HOLT,

See *Nevil-Holt.*

JESSOP's WELL,

On Stoke Common, near Cobham, in Surry,

This is a ſtrong purging water, with a nauſeous taſte, and is alſo ſlightly chalybeate.

Drank to about a quart, it purges briſkly without griping, and operates likewiſe by urine.

It alſo enlivens the ſpirits, and as the doſe is ſmaller than that of other purging waters, it ſits better on the ſtomach.

It loſes its virtues by being kept.

Taken in leſs doſes as an alterative, it is a good antiſcorbutic.

ILMINGTON,

In Warwickſhire, on the borders of Worceſterſhire.

This is a very clear and ſparkling chalybeate water, abounding in fixed air, and impregnated alſo with the foſſil alkali.

It preſerves its virtues for ſeveral weeks in bottles well corked; though if expoſed to the air, it loſes them in twenty-four hours.

It operates by urine; though it alſo ſometimes purges.

It is recommended as excellent in ſcorbutic complaints, in obſtructions of the liver and ſpleen, in the jaundice, in beginning dropſies, in the gravel, and obſtruction of urine, and in diſorders ariſing from acidity.

Externally, it is good for old running ſores, ſcorbutic eruptions, and the like.

INGLEWHITE,

In Lancaſhire.

It is a ſtrong chalybeate ſulphureous water, and is good in ſcorbutic, and cutaneous diſeaſes. But it will not purge unleſs Glauber's, or other ſalt be added to it.

ISLINGTON,

In the county of Middleſex, near London.

This is a light chalybeate water, ſtriking a purple or blackiſh colour with galls, and is reckoned one of the beſt of the kind about London.

The iron in this water is held in ſolution by means of *fixed air*, or *aërial acid*, as in the Pyrmont water. If after the fixed air has eſcaped, and the iron (which it held in ſolution) precipitates, the water be left to putrify, the fixed air diſengaged by the putrefaction again diſſolves the iron, and cauſes it to be ſuſpended in the water; it then recovers its chalybeate taſte, and property of tinging with galls, both which it had loſt before.

It is recommended in indigeſtion, and loſs of appetite, in lowneſs of ſpirits, nervous, hyſteric, and hypochondriacal complaints, and relaxed conſtitutions, and raiſes the ſpirits greatly. It is good in the fluor albus, in weakneſſes from miſcarriage, in obſtructions of the liver, the kidnies, &c. It is alſo ſerviceable in diſeaſes of the ſkin, in ſcorbutic complaints, in the gravel, and in paralytic diſorders.

It operates chiefly by urine, and may be drank to the quantity of ſeveral half pints, or even pints, according to the patient's conſtitution.

This water was formerly in great repute, and deſerves to be more frequented than it is at preſent.

KANTURK,

In the county of Cork, Ireland.

It is a chalybeate water, of the nature of that of *Peterhead*, but weaker.

KEDDLESTONE,

In Derbyſhire.

This is a ſtrong ſulphureous water, and ſtinks intolerably.

It is extremely clear at the fountain, but by ſtanding becomes blackiſh. It preſently turns ſilver of a black copper colour.

It is impregnated with ſea ſalt.

Its virtues reſemble thoſe of the *Harrogate* water.

KENSINGTON,

In the county of Middleſex, near London.

It is a purging water, of the nature of thoſe of *Acton* and *Pancras.*

KILBREW,

In the county of Meath, Ireland.

This is a ſtrong vitriolic chalybeate water, and reſembles the *Shadwell* water.

Half a pint vomits and purges.

When taken as an alterative it ſhould be uſed with great caution, beginning with a ſmall quantity, and increaſing the doſe.

It is recommended in the fluor albus, in immoderate fluxes from the womb, in obſtinate intermittents and in dropſies.

KILBURN,

In Middleſex, near London.

It is a purging water, like thoſe of *Bagnigge Wells, Dulwich,* &c.

KILROOT,

In the county of Antrim, Ireland.

It is of the nature of *Barrowdale* water, but weaker; ſeveral pints being required for a purge.

KILLINGSHANVALLY,

In the county of Fermanagh, Ireland,

This is a chalybeate water, and is alſo diuretic and gently laxative. It ſeems to reſemble the *Hanlys* chalybeate water.

KILLASHER,

In the county of Fermanagh, Ireland.

The water is ſtrongly ſulphureous, and it contains the foſſil alkali.

Its virtues reſemble thoſe of teh *Swadlingbar* water.

KINALTON, or KYNOLTON,

A village in Nottinghamſhire.

The water is limpid and cooling, with a ſomewhat ſaltiſh taſte.

It is purging; but is weaker than the Epſom water, and therefore muſt be drank plentifully.

KINCARDINE,

In the county of Mairns, Scotland.

This is a chalybeate water, little inferior in ſtrength to that of *Peterhead.*

KINGSCLIFF,

In Northamptonſhire.

It is a chalybeate laxative water, and reſembles the *Scarborough* and *Cheltenham* waters.

KIRBY, or KIRKBY-THOWER,

In Weſtmoreland.

There are two ſprings nearly of the ſame kind, only the lower one is reckoned the ſtrongeſt chalybeate.

The water of both is clear, fine, and has a chalybeate ſweetiſh taſte. Drank to the quantity of ſeveral quarts it is purgative. It is alſo a good corrector of acidities.

KNARESBOROUGH,

See *Dropping Well.*

KNOWSLEY,

In Lancaſhire.

This is a light ſpirituous chalybeate water, and both taſtes and ſmells of iron.

If drank to four or five pints it is laxative.

It reſembles the *Scarborough* and *Cheltenham* waters in virtue, though it ſeems to be leſs purgative.

KORYTNA,

Near Hunnobroda, in Moravia, Germany.

It is ſituated on an high and almoſt inacceſſible rock, in the midſt of a thick wood.

It has a very fœtid diſagreeable taſte, and a black colour; and there is much mud at the bottom of the well.

It is reckoned the ſtrongeſt ſulphureous water in that country.

KUKA,

In the county of Graditz, in Bohemia, near the town of Jaromitz, at the conflux of the rivers Elbe and Orlitz, Germany.

This is a very briſk chalybeate water, highly impregnated with fixed air, and alſo with the foſſil alkali. It has a grateful and ſomewhat pleaſant taſte, and a pungent ſmell, which affects the whole head. If it be heated, it emits a penetrating acid ſulphureous ſmelling vapour. It will not bear carriage.

It operates chiefly by inſenſible perſpiration; and ſometimes by ſpitting, by ſweat, and by urine.

In its general virtues it reſembles the *German Spaw* waters.

LA MARQUISE, et LA MARIE.

See *Vahls.*

LANCASTER, or SALE's SPA,

In Lancaſhire.

This is a clear chalybeate water, powerfully diuretic, gently purgative, and vomits if taken to the quantity of ſeveral quarts.

Taken as an alterative it has the general virtues of the *Tunbridge* water.

LATHAM,

In Lancaſhire.

It is a fine chryſtalline chalybeate, of the nature of the *Tunbridge* water.

LLANDRINDOD,

In the county of Radnor, South Wales.

In this place there are three mineral ſprings:

1ſt. *The ſaline pump, or purging water.*

2d. *The ſulphureous water,* commonly called the *black ſtinking well.*

3. *The chalybeate rock water.*

The *ſaline purging*, or *pump water*, may be uſed as a *purge* twice in a week. It is directed to be drank at the fountain head by half pints, till it begins to operate; the patient walking or riding about between each draught. It operates alſo by urine.

For an *alterative*, about three pints are directed to be drank in a day. A pint and half in the morning before breakfaſt, at three draughts, a quarter of an hour between each half pint. The other pint and half likewiſe at three draughts: one an hour before dinner; another about ſix o'clock in the evening; and the third going to bed. If the body remains coſtive, the quantity muſt be increaſed. The courſe ſhould be continued ſeveral weeks; and the moſt proper ſeaſon is the ſummer.

It is alſo uſed as a bath and fomentation.

It is recommended both internally and externally in the ſcurvy, leproſy, tetters, King's evil, and all cutaneous foulneſſes.

It is alſo preſcribed in the gravel, the hypochondriacal diſeaſe, indigeſtion, and in other complaints.

The ſulphureous water; called alſo the *black ſtinking water*, from its ſtrong ſmell, and the blackneſs of the channel through which it paſſes.

The quantity to be drank cannot in general be determined. But it is beſt to begin with ſmall doſes, from a pint to a quart in the morning, taken at repeated draughts. The quantity may be encreaſed as the conſtitution will bear; or as much as will ſet eaſy on the ſtomach, and paſs off well. When it gives the leaſt uneaſineſs, it is a ſign that the doſe is too large.

It is alſo uſed outwardly, by way of bath or fomentation.

It is recommended in a variety of complaints. In the King's evil, ſcurvy, leproſy, and all cutaneous diſeaſes. In the jaundice, hypochondriacal, and other diſorders ariſing from obſtruction. In the gravel, rheumatiſm, gout, bloody flux, hectic fever, weakneſſes of the limbs, want of digeſtion, and many others.

The *chalybeate*, or *rock water*, is limpid and tranſparent, as taken from the fountain, but on ſtanding ſoon loſes theſe qualities, together with its chalybeate taſte. Mixed with ſugar and rough cyder as it is taken up from the ſpring, it excites a briſk fermentation.

It is recommended in ſuch chronic diſtempers as proceed from laxity of the fibres, and weakneſs of the muſcular ſyſtem. In weakneſs of the nerves; in paralytic complaints; and the like.

It is alſo good in ſcorbutic caſes; in moiſt and convulſive aſthmas; in obſtinate agues; in obſtructions of the lower belly; in wandering, ſlow, nervous fevers; and in diſorders ariſing from obſtruction.

LLANGYBI,

In Caernarvonſhire, North Wales.

The water has an harſh taſte, inclining to bitter.

It has been found efficacious in diſorders of the eyes; in the King's evil; ſcald heads; ulcers; eruptions of the ſkin; the ſcurvy; the itch, &c. Alſo in rheumatiſms, palſy, and convulſions fits.

This water has long been in repute in the neighbourhood.

LEAMINGTON.

This is of the nature of *Barrowdale water*, but much weaker. The doſe for a purge is from a quart to four or five pints, and it likewiſe uſually vomits.

LEEZ,

Near the Earl of Mancheſter's, Eſſex.

It is a chalybeate water, ſimilar to thoſe of *Iſlington* and *Hampſtead.*

LINCOMB,

Near Bath, in Somerſetſhire.

This is a chalybeate and acidulous water, containing alſo the foſſil alkali, with a ſmall quantity of purging ſalt. It ſoon loſes its virtue if expoſed to the air; and in a few days alſo in bottles.

It reſembles, in its virtues, the waters of *Thetford* and *Ilmington*.

LISBEAK,

In the pariſh of Killaſher, in the county of Fermanagh, Ireland.

Here are two ſtrong ſulphureous waters, much of the ſame kind.

Their contents and virtues reſemble thoſe of the *Swadlingbar* water.

LIS-DONE-VARNA,

In the county of Clare, in Ireland.

This is a ſtrong chalybeate water, and manifeſts itſelf as ſuch both to the taſte and ſmell. It is alſo impregnated with the foſſil alkali.

It keeps its virtue in well-corked bottles.

It uſually vomits and purges on firſt drinking, but afterwards operates by urine.

It ſeems to reſemble, in virtues, the *Thetford* and *Ilmington* waters.

LOANSBURY,

In Lord Burlington's park, in Yorkſhire.

This is a ſulphureous water, weakly impregnated with a purging ſalt.

It ſeems to be of the nature of the *Aſkeron* water; but is only uſed at preſent for waſhing mangy dogs and ſcabby horſes.

MACCROOMP,

In Ireland, about ſixteen miles from Cork.

This is a chalybeate water, impregnated with the foſſil alkali, and reſembles the *Thetford* and *Ilmington* waters.

MAHEREBERG,

Situated near Branden Bay, in the county of Kerry, Ireland.

It is of the nature of the *Barrowdale* water. The doſe for a purge is from a pint to a quart.

MALLOW,

In the county of Cork, Ireland.

This is a warm water, perfectly limpid and pleaſant taſted, and keeps long in bottles well corked.

It is recommended in moſt caſes for which the *Briſtol* water has been uſed.

MALTON,

The ſpring lies at the weſt end of the town of New Malton, in Yorkſhire.

It is a ſtrong chalybeate, abounding with fixed air when freſh drawn; has a ſaltiſh taſte, and leaves a bitterneſs in the throat.

It operates by ſtool and urine. The doſe is from three pints to twice that quantity. If the ſtomach be foul, it is apt to vomit. In its virtues it reſembles the *Scarborough* water.

MALVERN,

In Glouceſterſhire.

There are two noted ſprings at this place, one of them called the *Holy Well*, in the midway between Great and Little Malvern, the other is about a quarter of a mile from Great Malvern. But the waters are not materially different.

They are light and pleaſant chalybeates, and are remarkable for being almoſt entirely free from any earthy matter. For three quarts of the Holy Well water being evaporated, ſcarce the fourth part of a grain of ſediment was left behind.

They are recommended as excellent in diſeaſes of the ſkin; in leproſies; ſcorbutic complaints; the King's evil; glandular obſtructions; ſcald heads; old ſores; cancers, &c. They are alſo ſerviceable in inflammations and other diſeaſes of the eyes; in the gout and ſtone; in cachectic, bilious, and paralytic caſes; in old head achs, and in female obſtructions.

The external uſe is by waſhing the part under the ſpout ſeveral times in a day; afterwards covering the part with cloths dipt in the water, which muſt be kept conſtantly moiſt. Thoſe who bathe, uſually, go into the water with their linen on, and dreſs upon it wet, and it is never found to be attended with inconvenience.

The waters, when firſt drank, are apt to occaſion, in ſome, a ſlight nauſea; others they purge briſkly for ſeveral days; but they operate by urine in all.

It is adviſeable to drink freely of the waters for ſome days before they are uſed externally.

MARKSHALL,

In Eſſex.

This is a chalybeate water, reſembling thoſe of *Iſlington* and *Hamſtead.*

MATLOCK,

Near Wirkſworth, in Derbyſhire.

At this place (which is perfectly romantic) are ſeveral ſprings of warm water, which appear to be of the nature of the *Briſtol* water, except that it is very ſlightly impregnated with iron.

Its virtues are ſimilar to thoſe of the *Briſtol* and *Buxton* waters.

The baths are recommended in rheumatic complaints, in cutaneous diſorders, and in other caſes where warm bathing is ſerviceable.

There are great numbers of petrifactions in the courſe of this water.

MAUDSLEY,

Near Preſton, in Lancaſhire.

The water is of a bluiſh colour, has a fœtid ſmell, and a brackiſh taſte.

It is a ſtrong ſulphureous water, and is alſo impregnated with ſea ſalt.

It is purgative, and has nearly the ſame virtues as the *Harrogate* water.

MECHAN,

In the county of Fermanagh, Ireland.

In this place there are two ſulphureous ſprings, both of the ſame nature.

They contain the foſſil alkali, and in their virtues reſemble the *Drumgoon* and *Swadlingbar* waters.

MILLAR's SPAW,

Stockport, in the county of Lancaſter.

It is a chalybeate water of the nature of that of *Tunbridge*, and ſeems to be ſtronger of the iron.

MOFFAT,

In the county of Annandale, Scotland.

At this place there are two ſprings or wells.

They are both ſulphureous, and have a ſtrong ſmell and taſte; the upper one is the ſtrongeſt, and moſt nauſeous, and is leſs drank of than the other, though as it bears heat better it is moſt uſed for bathing.

The Moffat water is alterative, and diuretic, but it ſometimes purges.

The quantity to be drank is three or four Engliſh quarts in a day. Thoſe of weakly conſtitutions, and children, leſs in proportion.

It is recommended to clear the firſt paſſages previous to a courſe of the water; and ſalts are alſo directed to be diſſolved in it if it does not paſs off readily. Letting blood is adviſed if it ſtays in the body too long.

The water muſt be refrained from if the patient has a cough, and in tubercles of the lungs. In hectic caſes it muſt alſo be drank with caution. Theſe caſes excepted, it may be uſed with great freedom.

It is much recommended in diſorders of the ſkin, in ſcrophulous and ſcorbutic complaints, in chronic obſtructions, in female weakneſſes and barrenneſs, in cholics, and other pains of the ſtomach and bowels.

Externally, it is employed for waſhing ſcrophulous ſores, and foul ulcers; cloths wetted with it are alſo directed to be applied. It has been warmed and uſed by way of bath to particular parts, and to the whole body; but it ſhould not be made too hot.

The hot ſteam has been uſed with ſucceſs for ſoftening and relaxing hard ſwelled parts, and ſtiff joints.

In theſe and the like complaints, it may be uſed both internally and externally.

MOSS HOUSE.

Near Maudſley, in Lançaſhire.

This is a briſk chalybeate water, and in its virtues reſembles thoſe of *Hampſtead* and *Iſlington.*

MORETON, or MORETON-SEE,

Situated about two miles Weſt of Market-Drayton, in Shropſhire.

It is eſteemed as an excellent cooling and diuretic purge. It operates briſkly; is pungent to the taſte, and ſeems to be of the nature of *Holt* water.

MOUNT D'OR,

Seven leagues from Clermont, in the Auvergne, France.

This water is warm, and of the nature of the *Aix-la-Chapelle.*

Taken internally it acts as a diuretic, and it ſometimes purges. Bathing in it ſweats profuſely, without weakening the patient.

It has been recommended in the rheumatiſm, gout, palſy, and many other diſorders.

MOUNT PALLAS,

In the county of Cavan, Ireland.

It is a chalybeate water, and ſeems to be of the nature of the *Athlone.*

NEVIL-HOLT,

Near Market-Harborough, in Leiceſterſhire.

This is an exceeding clear water as it falls from the ſpout, and is void of all ſmell.

It has a briſk auſtere bitter, yet not diſagreeable taſte, and abounds in fixed air.

Expoſed to the air, it ſoon becomes turbid, and ſpoils. But in well cloſed bottles it will keep good.

Drank to the quantity of ſeveral pints, it proves purgative, and operates without griping.

It alſo operates by urine and ſweat.

It is a powerful antiſeptic in putrid diſeaſes.

When taken as an alterative, it muſt be taken in ſmall doſes, from a few ſpoonfuls, to a quarter or half a pint ſeveral times in a day, according to its effect; and a little brandy, or the like, may be added if it ſits cold on the ſtomach.

It is eſteemed an excellent remedy in old dyſenteries and diarrhœas, in internal hemorrhages, in the fluor albus, and gleets, in the gravel, in rheumatiſms, and for the worms; it is good in atrophies, in bloated conſtitutions, and dropſical complaints, in ſcorbutic diſorders, in want of appetite, and in other caſes; in inflammatory complaints however, and where there is an acidity of the humours, it does miſchief.

Externally, it is a ſpeedy cure for freſh wounds, for inflamed eyes, and hectic ulcers, &c. eſpecially if taken inwardly at the ſame time.

NEW CARTMAL,

See *Rougham.*

NEWNHAM REGIS,

In Warwickſhire.

There are three wells at this place: they are all of them chalybeate, laxative, and diuretic; and ſeem to reſemble the *Scarborough* water.

They have ſomewhat of a ſulphureous ſmell.

NEWTON DALE,

In the North Riding of Yorkſhire.

This is a cold petrifying water.

It is ſaid to cure effectually, looſeneſſes, and bleedings of every kind; and that it reſtores weakened joints, though beginning to be diſtorted, by bathing in it,

NEWTON STEWART,

Near Caſtlehill, in the county of Tyrone, Ireland.

It is a chalybeate water, of the nature of that of *Tunbridge*.

NEZDENICE,

In Germany.

About half a mile from Hunnobroda, in the diſtrict of the Caſtle of Banow. The ſpring is near this village.

This is an acidulous water, impregnated with fixed air like thoſe of *Seltzer* and *Pyrmont*.

It is in great repute among the people in the neighbourhood, for the cure of many diſorders, particularly thoſe in which the waters juſt mentioned are ſerviceable.

NOBBER,

In the county of Meath, Ireland.

It is a vitriolic water, and reſembles thoſe of *Hartfell* and *Croſstown.*

NORMANBY,

Four miles from Pickering, in Yorkſhire.

It is clear, beautiful, and fœtid, and when poured out ſparkles like Champagne.

It is a ſulphureous, and gently purgative water, and reſembles the *Aſkeron* water in virtues.

NORTH-HALL,

See *Barnet.*

NOTTINGTON,

Near Weymouth, in Dorſetſhire.

This is a ſtrong ſulphureous water.

Its flavour reſembles that of boiled eggs; and its colour, in a tin veſſel, is blue. A ſhilling put into it at the fountain head, becomes, in a few minutes, blue.

It contains the foſſil alkali, with a little earth.

It is in repute for curing foulneſſes of the ſkinr

ORSTON,

In the county of Nottingham, near Thoroton.

This water has a delicious, gentle, rough, ſweetiſh, chalybeate taſte, and a ſlight ſulphureous mell. It is replete with fixed air, ſparkles and flies when poured out into a glaſs, and makes the heads of thoſe who drink it giddy.

It ſoon ſpoils by expoſure to air.

It is purgative, and ſeems to be poſſeſſed of the ſame virtues as the *Hartlepool* water. It makes the tongue and ſtools black, like many other chalybeate waters.

OULTON,

In Norfolk.

It is a light chalybeate water, ſimilar to that of *Iſlington.*

OWEN BREUN,

In the county of Cavan, Ireland.

This is a ſulphureous water, impregnated with a purging ſalt, and a little native alkali.

Its virtues reſemble thoſe of the *Aſkeron* water.

PANCRAS,

In Middleſex, near London.

The water is almoſt inſipid to the taſte.

It is impregnated with a purging ſalt, together with a ſmall portion of ſea ſalt.

It is therefore a purgative water, and is alſo diuretic.

Its virtues are allied to thoſe of the *Cheltenham*

tenham water, and it is alſo of ſervice in the ſtone, gravel, and ſimilar diſorders.

PASSY,

Near Paris, in France.

It is a clear, colourleſs, chalybeate water, with a ſubacid taſte, and ferruginous ſmell, and emits plenty of air bubbles.

It is a ſtrong chalybeate water, but does not prove purgative, unleſs drank in large quantity. It is of the nature of *Pyrmont* water.

PETERHEAD,

In the county of Aberdeen, Scotland.

This is one of the ſtrongeſt, and moſt famous chalybeate waters in Scotland. It is of the nature of our *Iſlington* water, but more powerful.

PETTIGOE,

In the county of Donnegal, Ireland.

It is one of the ſtrongeſt ſulphur waters in Ireland; and is alſo impregnated with a purging ſalt.

In its virtues it reſembles the *Aſkeron* water.

PLOMBIERS,

In Loraine, France.

The water is tepid and ſaponaceous, with a ſaltiſh taſte.

It is recommended for complaints of the ſtomach proceeding from acidity; in ſpitting of blood; in hæmorrhages; phthyſical and aſthmatic complaints; in dropſy of the belly; the diabetes; fluor albus; dyſentery; and in all cutaneous diſorders.

It is drank from a pint to three quarts, on an empty ſtomach, in the morning; it is diuretic and laxative.

It is alſo uſed outwardly as a bath; and is reckoned excellent for waſhing ulcers.

PONTGIBAULT,

In the Auvergne, France.

The water is limpid, ſubacid, and vinous.

It contains the native alkali, together with calcareous earth.

It is diuretic and gently opening; and its virtues are allied to thoſe of the *Tilbury* and *Seltzer* waters.

PYRMONT,

In Weſtphalia, Germany.

This is a very briſk, ſpirity chalybeate, abounding in fixed air; and when taken up from the fountain, ſparkles like the briſkeſt Champaign wine. It has a fine, pleaſant, vinous taſte, and a ſomewhat ſulphureous ſmell. It is perfectly clear, and bears carriage better than the *Spaw* water.

Perſons who drink it at the well are affected with a kind of giddineſs or intoxication; owing, it may be ſuppoſed, to the great quantity of fixed air with which the water abounds.

The common operation of this water is by urine; but it is alſo gently ſudorific; and if taken in large quantity proves laxative.

laxative. When, however, it is required to have this latter effect, it is uſual to mix ſome ſalts with the firſt glaſſes.

It is drank by glaſsfuls in the morning to the quantity of from one, to five or ſix pints, according to circumſtances, walking about between each glaſs.

It is recommended in caſes where the conſtitution is relaxed. In want of appetite and digeſtion; in weakneſs of the ſtomach, and in heart-burn; in the green ſickneſs; in female obſtructions, and in barrenneſs; in the ſcurvy, and cutaneous diſeaſes; and in the gout, eſpecially when mixed with milk. In cholics; in bloody fluxes; in diſeaſes of the breaſt and lungs; in which caſes it is beſt taken lukewarm; in nervous, hyſteric, and hypochondriacal diſorders; in apoplexies and palſies; in the gravel, and urinary obſtructions; in foulneſs of the blood; and in obſtructions of the finer veſſels. It amends the lax texture of the blood; exhilarates the ſpirits without inflaming, as vinous liquors are apt to do;

and is among the beſt reſtoratives in decayed and broken conſtitutions.

This water poſſeſſes the general virtues of the *Spaw* water; and at the fountain it is even more ſpirity, as well as a ſtronger chalybeate. The reader therefore is referred to what is ſaid of the *Spaw* water, for a further account of its virtues.

QUEEN CAMEL,

Near Sherborne, in Somerſetſhire.

The water has a fœtid, ſulphureous ſmell, like the waſhings of a foul gun. It tinges ſilver of a yellow or black colour, and blackens the ſtones on which it runs. It is alſo ſaid to be colder than common water.

It contains the foſſil alkali, together with ſea ſalt, a chalky earth, and a bituminous or ſulphureous matter.

It has been uſed with ſucceſs both inwardly and outwardly in cutaneous diſorders, the ſcurvy, and the King's evil.

And for theſe purpoſes a place is contrived for bathing.

RICHMOND,

In the county of Surry.

This is a purging water, of the nature of thoſe of *Acton* and *Pancras.*

ROAD,

In Wiltſhire.

This a chalybeate water with a ſulphureous ſmell, and is impregnated with the foſſil alkali.

It is recommended internally and externally in ſcorbutic and ſcrophulous caſes, and in cutaneous diſeaſes, &c.

On firſt taking this water it acts as a gentle purge.

It does not bear carriage.

ROUGHAM,

In Lancaſhire.

It is of the nature of *Barrowdale* water, but much weaker.

The doſe for a purge is from three to eight quarts. In that quantity it operates powerfully by ſtool, and alſo by urine.

SAINT BARTHOLOMEW's WELL, *Ireland.*

It is about two miles ſouth-weſt from Cork.

The water is ſoft, and mixes ſmoothly with ſoap.

By keeping it putrifies, and then tinges ſilver, and throws up a ſtinking ſcum which has ſomewhat of an irony taſte. Galls then give it a purple tinge, which they do not to the freſh water.

It contains an alkaline ſalt.

Its virtues are ſimilar to thoſe of the *Tilbury* water.

SAINT ERASMUS's WELL.

Situated on Lord Chetwynd's grounds in Staffordſhire.

The water is of the nature of *Barrowdale*, but much weaker.

It is of the colour of ſack, but without much taſte or ſmell.

If drank to the quantity of ſeveral quarts, it operates powerfully by ſtool.

SALES SPAW.

See *Lancaſter*.

SCARBOROUGH,

In Yorkſhire.

The waters of this place are chalybeate and purging; and they are more frequented and uſed than any other water of this claſs in England.

There are two wells; the one more purgative, the other a ſtronger chalybeate. Hence the latter (which is neareſt the town) has been called the *chalybeate* ſpring, the other the *purging*; though they are both impregnated with the ſame principles, but in different proportions. The *purging* is the moſt famed, and is that which is uſually called the *Scarborough* water.

When theſe waters are poured out of one glaſs into another, they throw up a number of air bubbles; and if ſhook for a while in a cloſe ſtopt phial, and the phial be ſuddenly opened before the commotion ceaſes, they diſplode an elaſtic vapour with an audible noiſe, which ſhews that they abound in fixed air.

At the fountain they both have a briſk, pungent, chalybeate taſte; but the *purging* water taſtes bitteriſh, which is not uſually the caſe with the *chalybeate* one.

They loſe their chalybeate virtues by expoſure, and alſo by keeping; but the purging water ſooneſt.

They both putrify by keeping; but in time recover their ſweetneſs.

Four or five half pints of the *purging* water drank within an hour, give two or three eaſy motions, and raiſe the ſpirits. The like quantity of the *chalybeate* purges leſs, but exhilarates more, and paſſes off chiefly by urine.

Theſe waters have been found of ſervice in hectic fevers, in weakneſſes of the ſtomach, and indigeſtion; in relaxations of the ſyſtem; in nervous, hyſteric, and hypochondriacal diſorders; in the green ſickneſs, in the ſcurvy, rheumatiſm, and aſthmatic complaints; in gleets, the fluor albus, and other preternatural evacuations, and in habitual coſtiveneſs. The waters are to be varied according to the intention to be anſwered.

SCOLLIENSES,

In Upper Rhoetia, Switzerland.

It is a chalybeate water, impregnated with the foſſil alkali; and ſo full of fixed air, that it often burſts the bottles in which it is kept.

It makes the drinkers giddy, and operates mildly, though largely by ſtool, and by ſpitting.

It is eſteemed excellent for cholicky pains, both as a cure and preventative.

In its general virtues it reſembles the *Spaw* water.

SEA WATER,

Sea water has a ſalt, bitteriſh taſte, appears of a greeniſh colour, and becomes fœtid by keeping.

As an immenſe number of ſprings, rivers, &c. are continually emptying themſelves in the ſea, as it contains an almoſt infinity of animals and vegetables, and covers and waſhes ſuch a variety of lands and ſhores, it would ſeem to be impregnated with very heterogeneous matters. Nevertheleſs, the water, in different parts of the ocean, appears to be nearly alike, and the difference in its contents appears to be much leſs than might at firſt be imagined.

It contains ſea ſalt in great quantity. A chalky earth, or rather, what is called by the chemiſts, a calcareous marine ſalt: a bittern, from which the Epſom ſalts of the ſhops are prepared, and ſome unctuous and bituminous matters.

Sea water, in hotter climates, generally contains a greater proportion of theſe matters than that in colder ones, and therefore is ſtronger. The difference, in ſome places, is above two to one.

Sea water taken internally, in ſmall quantity, proves a ſtimulating and heating remedy, diſſipating the finer fluids, and occaſioning thirſt.

In larger quantity it proves purgative. But differs from other purges in that patients who drink it daily for a conſiderable time, inſtead of loſing, often gain ſtrength by it.

It therefore acts, not merely as a purgative, but gives alſo a briſk ſtimulus to the ſtomach and inteſtines, thereby encreaſing the appetite, and promoting digeſtion.

By means of this excellent property of ſea water (viz. our being able to keep up a purging for a conſiderable time, without hurting the conſtitution), we are enabled frequently to remove diſorders which have reſiſted the force of other remedies.

It is of excellent uſe in ſcrophulous complaints;

plaints; and glandular ſwellings are generally removed by it. If joined with the bark, it has ſometimes a better effect in thoſe caſes.

It is alſo ſerviceable in purging off groſs humours, which have been the conſequence of indulging the appetite too freely, and leading an inactive life: alſo in cleanſing the inteſtines of viſcid mucus, and worms.

In caſes where there is fever, heat, or inflammation, ſea water is found to be hurtful. Previous to its uſe, therefore, theſe ſymptoms ſhould be removed by bleeding, purging, and a proper cooling treatment.

As Sea water is ſpecifically heavier than common water, and, (by reaſon of the ſaline matters contained in it,) is alſo more ſtimulating, it is more efficacious when uſed externally as a bath.

It has alſo particular virtues when externally uſed. On account of its ſtimulating and diſcutient property, it is excellent in the ſcrophula or king's evil, in hard ſwellings, in the bite of a mad dog, in the rickets, in the dry leproſy, and itch, in paralytic and ſcorbutic complaints, and in many other caſes. But in moſt of theſe, it is proper to uſe it both internally and externally.

SEDLITZ,

Germany,

A village in Bohemia.

This purging water is of the ſame nature as our Epſom, but much ſtronger.

Two or three tea cups full are generally ſufficient for a doſe; and the ſtrongeſt conſtitution ſcarce requires more than a pint.

SELTZER,

In Germany.

This ſpring is near to the town of Neider, or Lower Seltzer, about three leagues from Franckfort on the Maine, in the Lower Archbiſhoprick of Treves.

It riſes near a ſmall trout ſtream. The country and avenues around are delightful, and afford a very pleaſing proſpect.

The water iſſues forth with great rapidity; is remarkably clear and light, and on pouring it from one veſſel to another, plenty of air bubbles ariſe.

It has, at firſt, ſomewhat of a briſk ſub-acid pungent taſte, but leaves behind a lixivial one.

If expoſed twenty-four hours to the air, it loſes entirely its original taſte, and acquires that of a flat alkaline ley. But no ſediment is depoſited.

It putrifies ſooner than any other medicinal water.

When freſh, it makes an immediate efferveſcence with acids, but eſpecially with Rheniſh wines, and a little powdered ſugar.

It alſo curdles with a ſolution of ſoap.

It does not change purple with galls; and therefore contains no chalybeate.

Oil of tartar dropt into it makes it milky, but does not occaſion a precipitate.

It contains an alkaline ſalt, together with a ſmall quantity of calcareous earth, and ſea ſalt, and it abounds in fixed air.

The operation of this water is chiefly by urine, for it has no purgative virtues. It corrects acidities, renders the blood and juices more fluid, and promotes a briſk and free circulation. Hence it is good in obſtructions of the glands, and againſt groſs, and viſcid humours.

It is of great uſe in the gravel and ſtone, and in other diſorders of the kidnies and bladder.

It is alſo excellent in gouty and rheumatic complaints *, eſpecially when mixed with milk.

† It is drank with great ſucceſs in ſcorbutic, cutaneous, and putrid diſorders.

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* In theſe diſorders its virtue is ſaid to be much improved by the addition of Rheniſh wine, and a little ſugar.

† Aſſes, or goats milk, is uſually preferred.

It is good againſt the heart-burn; and it is alſo an excellent ſtomachic. Several pints may be drank in the courſe of a day.

On account of its diuretic quality, it is of ſervice in dropſical complaints.

Mixed with aſſes milk, it is of great uſe in conſumptive caſes, and in diſorders of the lungs.

It is in great eſteem in nervous diſorders, either with, or without milk, as is found to be moſt ſuitable to the conſtitution.

It is alſo of ſervice in hypochondriacal, and hyſteric complaints, and in obſtructions of the menſes, eſpecially if exerciſe be uſed.

It is given in purgings and fluxes ariſing from acidity in the bowels, with good ſucceſs.

Drank by nurſes, it is ſaid to render their milk more wholeſome and nouriſhing to children, and to prevent it from turning ſour on their ſtomachs.

As the fixed air of this water ſo ſoon flies off, it ought either to be drank on the ſpot, or at leaſt ſhould be impregnated with a freſh quantity previous to its being taken, according to the directions given in the beginning of this treatiſe.

Thoſe perſons, with whoſe ſtomachs water alone does not ſo well agree, are adviſed to mix with it ſome generous and agreeable wine, in caſes where wine will not be hurtful. (See alſo *Spaw* and *Pyrmont* waters.)

SENE, or SEND,

Near the Devizes, Wiltſhire.

At this place are two chalybeate ſprings, one of them ſtronger than the other, but both reſembling in virtues the *Hampſtead* and *Iſlington* waters.

They are diuretic, but not purgative.

At a village called *Paulſholt*, near this place, is another chalybeate ſpring.

SEYDSCHUTZ,

In Germany.

It is ſituated near to that of *Sedlitz*, and is of the ſame purgative nature, but ſomewhat ſtronger.

SHADWELL,

Near London, ſituated in Sun Tavern Fields.

This is a vitriolic chalybeate water; that is, it is impregnated with green copperas, or vitriol of iron, and is one of the ſtrongeſt waters of the kind in England; it alſo contains iron held in ſolution by fixed air, or aërial acid.

It has an acid, auſtere, vitriolic taſte, and with galls, gives a bluiſh black colour like ink.

It has been taken inwardly to the quantity of a pint, divided into two or three doſes in the courſe of an hour in the morning. It vomits, and gently purges; it turns the ſtools black.

It has been found of ſervice in the fluor albus, in obſtinate gleets, and dyſenteries; in inward bleedings; in the jaundice; and in ſcorbutic, and leprous caſes. But it has chiefly been uſed externally for ſore eyes, the itch, ſcabs, tetters, ſcald-head, ulcers, fiſtulas, and the like, by waſhing, or elſe applying linen rags dipped in it, to the parts.

In ſcorbutic and leprous caſes, the internal uſe is firſt adviſed 'till the eruptions are thrown out, which are then to be removed by the outward application of the water.

SHAPMOOR,

The ſpring is ſituated in a marſhy heath, between Shap and Orton, in Weſtmoreland.

This is a ſulphureous water, impregnated with a purging ſalt.

Three pints of it prove purgative.

In its virtues it ſeems to reſemble the *Aſkeron* water.

SHETTLEWOOD,

Situated between Bolſover and Romeley, in Derbyſhire.

It is a ſulphureous water, impregnated with ſea ſalt.

Its virtues reſemble thoſe of the *Harrogate* water.

SHIPTON,

In Yorkſhire.

It is a ſulphureous water, impregnated with ſea ſalt, together with a purging ſalt.

In its virtues it reſembles the *Harrogate* water.

SOMERSHAM,

In Huntingdonſhire.

This is a chalybeate water, impregnated with green vitriol and allum, and contains alſo fixed air.

The ſeaſon for drinking it is from May to October.

It is drank in the morning to the quantity of ſeveral glaſſes. It is recommended in debilities of the ſtomach and bowels, in dyſenteries, hæmoroids, and worms, in nidrous crudities, in obſtructions of the liver and ſpleen, in uterine complaints, in the ſtone and gravel, in the ſcurvy, in hyſteric and hypochondriacal diſorders, and many others.

It is proper to purge before and after the courſe, and ſalts may alſo be occaſionally added to it.

Externally it is applied to foul ulcers and cancers.

SPAW,

In the biſhoprick of Leige, Germany, twenty-one miles South Eaſt from the town of Leige.

In and about this town there are ſeveral ſprings, which afford excellent chalybeate waters: and in Great Britain, they are the moſt drank of any foreign mineral waters.

The principal ſprings are,

1. The Pohoun, or Pouhon, ſituated in the middle of the village.
2. Sauveniere, about a mile and a half eaſt from it.
3. Groisbeck, near to the Sauveniere.
4. Tonnelet, a little to the left of the road to the Sauveniere.
5. Wartroz, near to the Tonnelet.
6. Geronsterre, two miles ſouth of the Spaw.
7. Sarts, or Niveset, in the diſtrict of Sarts.
8. Chevron, or Bru, in the principality of Stavelot.

9. Couve,	All near Malmdy.
10. Beverse,	
11. Sige,	
12. Geromont.	

The Pouhon, is a ſlow deep ſpring, and is more or leſs ſtrong or ſpirity according to the ſtate of the atmoſphere.

It is a chalybeate and acidulous water, highly impregnated with fixed air, and contains alſo the foſſil alkali, with ſome earthy matter.

It is in its moſt perfect and natural ſtate in cold, dry weather. It then appears colourleſs, tranſparent, and without ſmell, and has a ſubacid chalybeate taſte, with an agreeable ſmartneſs: at ſuch times, if it be taken out of the well in a glaſs, it does not ſparkle; but after ſtanding awhile, covers the glaſs on the inſide with ſmall air bubbles; but if it be ſhaken, or poured out of one glaſs into another, it then ſparkles, and diſcharges a great number of air bubbles at the ſurface.

In warm, moiſt weather, it loſes its tranſparency, appears turbid or wheyiſh, contains leſs fixed air, and is partly decompoſed. A murmuring noiſe alſo is ſometimes heard in the well.

It is therefore in its greateſt perfection when the weather is cold and dry.

It is colder than the heat of the atmoſphere by many degrees.

It is ſuppoſed to contain the greateſt quantity of fixed air of almoſt any acidulous water; and in conſequence thereof has a remarkable ſprightlineſs and vinoſity, and boils by mere warmth. This, however, ſoon flies off, if the water be left expoſed; though in well corked bottles it is in a great meaſure preſerved.

It is capable of diſſolving more iron than it naturally contains, and thereby becomes a ſtronger chalybeate. This is owing to the great quantity of fixed air which it contains.

For the ſame reaſon an ebullition is raiſed in this water on the addition of acids, by reaſon that they diſengage its fixed air.

It mixes ſmoothly with milk, whether it be cold or of a boiling heat.

SAUVENIER. It is of the ſame nature with the POUHON water, and ſeems to be even more acidulous. For it diſſolves more iron; ſtands longer fine; and preſerves its purple tinging quality for a greater length of time.

At the well it has ſomewhat a ſmell of ſulphur.

GROISBECK. The water is of the ſame nature with that of POUHON, but is more acidulous; has a vitriolic taſte, and ſomewhat of a ſulphureous ſmell.

TONNELET. This water ſeems even to ſurpaſs that of POUHON, and has been too much neglected *. It is one of the moſt ſprightly waters in the world. It is much colder than either of the Spaw waters; has no ſmell; is bright, tranſparent, and colourleſs; and from the rapidity of its motion does not foul its baſon. It has a ſmart, ſubacid, ſprightly taſte, not unlike the briſkeſt Champaign wine.

From a variety of experiments it appears, that this water is more ſtrongly charged than any of the others with fixed air, on which the *energy* of all waters of this kind depend.

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* The *Tonnelet* ſpring, ſo much extolled by Dr. Lucas, is, as I am informed by Dr. Simmons, now almoſt deſerted; and ſo is the *Wartroz*.

WARTROZ. Its ſituation is loweſt of any of the ſprings about Spaw, and is more apt to be foul. But when the well is cleaned out, and the water pure, it is found to be of the ſame nature as that of POUHON. It is not purgative, as ſome have aſſerted.

GERONSTERRE. It reſembles the POUHON water in its briſk, acidulous, and chalybeate taſte; and has alſo a ſulphureous ſmell at the fountain, which it loſes by being carried to a diſtance. This ſmell is ſtrongeſt in warm moiſt weather.

The air, or vapour, of this water affects the heads of ſome who drink it, occaſioning a giddineſs, or kind of drunkenneſs, which goes off in a quarter or half an hour. The Pyrmont, and ſeveral other briſk chalybeate waters, are found to have the ſame effect.

It bears carriage as well as the other *Spaw* waters, though the contrary opinion has been induſtriouſly propagated. It is colder than any of the ſprings, the *Tonnelet* excepted.

It does not ſeem to contain ſo great a quantity of fixed air as the *Pohoun*, and ſome of the other *Spaw* waters.

SARTS, or NIVESET. It reſembles the *Tonnelet* water, but is rather leſs briſk and vinous. It is however more acid and ſtyptic.

BRU, or CHEVRON. It approaches to the nature of the *Tonnelet* water. The phyſicians at Leige have artfully decried this water, becauſe it is not in the principality of Leige. But by every trial it appears not to be inferior to any of the *Spaw* waters.

COUVE and BEVERSE. The *Couve* nearly reſembles the *Tonnelet* water; or rather, may be placed in a medium between that and the *Wartroz*. It hardly equals the tranſparency, ſmartneſs, and generous vinous taſte of the firſt, but it greatly ſurpaſſes the latter. The *Beverſe* agrees with this, only that it does not retain its ſmartneſs ſo well by keeping.

LA SIGE. It has ſome of the general properties of the *Spaw* waters, but in other reſpects it is different.

It is moderately ſubacid, ſmart, and grateful, but has no ſenſible chalybeate taſte.

It ſparkles like Champaign wine when poured from one glaſs to another. Upon ſtanding it loſes its fixed air, and throws up a thick mother of pearl coloured pellicle.

It is much more loaded with earthy matters, and leſs impregnated with iron and fixed air than the other Spaw waters.

GEROMONT. As a chalybeate and acidulous water it ſeems to be nearly of the ſame ſtrength with the *La Sige*; but it contains a greater quantity of the foſſil alkali, together with a mixture of ſea ſalt. The earthy matters, however, are leſs.

Their Virtues, &c.—It appears, that theſe waters are compounded of nearly the ſame principles, though in different proportions. All of them abound with the mineral elaſtic ſpirit, or *fixed air*. They contain more or leſs iron, ſoſſil alkali, and calcareous and ſelenitical earths; together with a ſmall a ſmall portion of ſea ſalt, and an oily matter common to all waters. Theſe are all kept ſuſpended, and in a neutral ſtate, by means of the aërial acid, or fixed air.

From a review of the contents of theſe waters, it cannot be imagined that their virtues principally depend on the ſmall quantity of *ſolid* matters which they contain. They muſt therefore depend moſtly on their ſubtle mineral ſpirit, or *fixed air*. And they are probably rendered more active and penetrating both in the firſt paſſages, and alſo when they enter the circulation, by means of that ſmall portion of iron, earth, ſalt, &c. with which they are impregnated.

Theſe waters are diuretic, and ſometimes purgative; like other chalybeate waters they tinge the ſtools black.

They exhilerate and affect the ſpirits with a much more kind and benign influence than wine or ſpirituous liquors; and their general operation is by ſtrengthening the fibres. They cool and quench thirſt much better than common water.

They are therefore found excellent in caſes of univerſal languor or weakneſs, proceeding from a relaxation of the ſtomach, and of the fibres in general, and where the conſtitution has been weakened by diſeaſes, or by too ſedentary a life. In weak, relaxed, groſs habits; in nervous diſorders; in the end of the gout and rheumatiſm, where the conſtitution needs to be repaired; in ſuch aſthmatic diſorders and chronic coughs as proceed from too great a relaxation of the pulmonary veſſels; in obſtructions of the liver and ſpleen; in caſes where the blood is too thin and putreſcent, occaſioned by irregularities, or by ſcorbutic or other putrid diſorders; in hyſterical and hypochondriacal complaints, where the fibres are too irritable and relaxed, and where the habit in general needs to be reſtored; in paralytic diſorders; in gleets; in the fluor albus; in fluxes of the belly; and in other inordinate diſcharges proceeding from too great weakneſs or relaxation of any particular part; in the gravel and ſtone; in female obſtructions; in barrenneſs; and in moſt other caſes where a ſtrengthening and briſk ſtimulating reſolving chalybeate remedy is wanted; and where there are no confirmed obſtructions, or ſo much heat and fever as to forbid their uſe.

They are, however, generally hurtful in hot, bilious, and plethoric conſtitutions, when uſed before the body is cooled by proper evacuations. They are alſo hurtful in caſes of fever and heat; in hectic fevers and ulcerations of the lungs, and of other internal parts, particularly where there is no free outlet to the matter; and alſo in moſt confirmed obſtructions attended with fever.

The uſual ſeaſon for drinking them is in July and Auguſt, or during the ſummer months from May to September. The water, however, is beſt in the winter, and in dry, froſty weather; and probably might then be drank to greateſt advantage.

If they lie cold on the ſtomach, a few carraway ſeeds, cardamoms, or other aromatic,

matic, may be taken with them. The veſſel out of which it is drank may alſo be warmed with hot water, or a little warm water may be added immediately before drinking. It muſt always be drank before noon.

The quantity to be drank ſhould be different according to the age, conſtitution, and other circumſtances of the patient. The only certain rule is, that quantity which the ſtomach can bear without heavineſs or uneaſineſs. The greater the quantity any one drinks, the better, provided it agrees, and paſſes well off. It is adviſeable to begin with drinking a glaſs or two ſeveral times in a day, encreaſing the quantity daily, as far as the ſtomach will bear. To continue that doſe during the courſe, and to finiſh by leſſening it by the ſame degrees by which it was augmented. Moderate exerciſe is proper after drinking. It is to be continued for ſeveral weeks or months, according to the circumſtances.

Previous to the uſe of the water, it is proper to cleanſe the firſt paſſages by gentle purges, and if judged neceſſary, an emetic alſo ſhould be given. During the courſe, likewiſe coſtiveneſs ſhould be prevented, by occaſionally adding Rochel ſalts, or rhubarb, to the firſt glaſſes of water in the morning.

When there is too much heat, the ſaline draughts, nitre, vegetable acids, or the like, ſhould be given, and the elixir of vitriol has been added to the water, in intermittent feveriſh complaints, with good effect.

A cooling regimen ſhould be obſerved while drinking theſe waters, as alſo regular hours, and quietneſs, or chearfulneſs of mind.

In caſes of rigidneſs of the fibres, the warm bath is recommended, among the beſt preparatives to a courſe of theſe waters; and, hence bathing at *Aix-la-Chapelle*, or at *Chaude Fontaine*, is often premiſed. The warm bathing may occaſionally be repeated during the courſe. In oppoſite caſes, the cold bath is recommended.

The Spaw water is uſed alſo externally,

in a variety of caſes, with good ſucceſs. It is uſed as an injection in the fluor albus, and in ulcers and cancers of the womb, and alſo in the gonorrhœa; it is ſerviceable in venereal aphthæ, and ulcers in the mouth. It is uſed to waſh phagadenic ulcers: it is recommended by way of gargle for relaxed tonſils, and for faſtening looſe teeth; it is alſo good in other relaxations; and it is ſaid to cure the itch, and ſimilar complaints, by waſhing and bathing; an internal courſe being alſo obſerved at the time.

As the Spaw waters are impregnated with different proportions of the ſame ingredients, they may be choſen differently, according to the intentions we have in view. The *Pohoun* is the ſtrongeſt chalybeate. The *Tonnelet* and *Geronſterre*, are weaker chalybeate, but are briſker, and rather more ſpirituous. The *Groeſbeck, Sauveniere*, and *Wartroz*, are ſtill weaker chalybeates, but highly impregnated with calcareous and ſelenitical earths, and contain alſo a greater proportion of the foſſil alkali. The *Geromont*, is likewiſe a weak chalybeate, but contains a great deal of calcareous and ſelenitical earth, and about three times as much alkaline ſalt as any of the others. The four laſt waters, therefore, will be better in diſorders ariſing from an acid cauſe, and as diuretics, particularly the *Geromont*.

STENFIELD,

In Lincolnſhire.

It is a chalybeate laxative water, and reſembles that of *Orſton*. It is light, clear, pleaſant taſted, and full of ſpirit at firſt, but on long ſtanding in its large reſervoir ſpoils.

STREATHAM,

In Surry, near London.

The water has a yellowiſh tinge, and throws up a ſcum variegated with blue, green, and yellow. Its taſte is ſomewhat ſaline and diſagreeable.

It is a mild purging water, and may be drank to the quantity of three or four pints.

It is alſo diuretic, and is ſaid to be found uſeful in diſorders of the eyes.

STANGER,

Near Cockermouth, in Cumberland.

This is a ſalt chalybeate, or vitriolic water; and, when drank to four or five pints, operates with violence both upwards and downwards.

STOKE.

See *Jeſſop's Well.*

SUCHALOZA,

About a mile from Hungarian Broda, in Germany.

It is an acidulous water, reſembling that of *Nezdenice* in virtues.

It is greatly eſteemed in the neighbourhood for the cure of ſcrophulous and other diſorders, in which waters of this kind are ſerviceable; and is drank with victuals inſtead of ſmall beer and wine.

SUTTON BOG,

In the county of Oxford, near to Northamptonſhire.

This is one of the waters termed *ſulphureous.*

It has an intolerable fœtid ſmell, like rotten eggs. Its taſte is ſaltiſh and pungent, like ſoap lees.

It throws up a blue ſcum, and the mud at the bottom is jet black. In half an hour it turns ſilver of a copper colour.

It contains an alkaline ſalt, together with a little ſea ſalt.

It is a mild laxative, or purging water.

It is uſed both for drinking and bathing; and ulcers, tumours, ſcrophulous, and other diſeaſes of the ſkin are ſucceſsfully waſhed with it. The mud is alſo made uſe of.

SWADLINGBAR,

In the county of Cavan, Ireland.

The water is ſometimes tranſparent and colourleſs; at other times ſomewhat whitiſh.

It has a ſtrong ſulphureous ſmell, which it retains long in bottles well corked. It tinges ſilver of a blackiſh or copperiſh colour.

The well is commonly covered with a whitiſh or bluiſh ſcum; and depoſits a mud which burns, on the red hot iron, with a blue flame.

It contains the foſſil alkali, together with a little ſea ſalt and earth.

It reſembles in its virtues the water of *Drumgoon*.

SWANSEY,

In Glamorganſhire, North Wales.

It is impregnated with green copperas, and therefore is of the nature of the *Shadwell* water.

Taken inwardly it is alſo ſaid to ſtop purgings; applied outwardly it ſtops bleeding.

SYDENHAM,

In Kent, near London.

The water is ſomewhat bitteriſh to the taſte.

It is purgative, and of the nature of *Epſom* water, but weaker.

TARLETON,

Eight miles from Preſton in Lancaſhire.

This is a chalybeate water, and drank to the quantity of three or four pints proves purgative. In its virtues it ſeems to reſemble the *Scarborough* water. It has a ſomewhat ſulphureous ſmell when firſt drawn.

TEWKSBURY,

In Glouceſterſhire.

It is a purging water, of the nature of thoſe of *Acton*, *Pancras*, and *Epſom*.

There are two other ſprings of the ſame kind in the neighbourhood; one of them is in Walton grounds, the other in Teddington grounds.

THETFORD,

In the county of Norfolk.

This is a chalybeate and acidulous water, and contains alſo the foſſil alkali.

It operates by urine, and alſo gently by ſtool.

It is recommended in pains of the ſtomach and bowels; in loſs of appetite; in relaxed ſtate of the fibres; in hyſteric diſorders; and in beginning conſumptions.

THOROTON,

Near Newark upon Trent, Nottinghamſhire.

It is a chalybeate laxative water, reſembling that of *Orſton.*

THURSK,

In the North Riding of Yorkſhire.

It is a briſk, ſparkling, chalybeate water, and is alſo purgative and diuretic. It reſembles the *Scarborough* and *Cheltenham* waters.

TIBSHELF,

In Derbyſhire.

This is a fine clear chalybeate; and when poured from one glaſs to another, ſparkles like the *Spaw* water, which it reſembles in virtues.

TILBURY.

The ſpring which affords this water is ſituated near a farm houſe at Weſt-Tilbury, near Tilbury-Fort, in Eſſex.

This water is not quite limpid at the well, but is ſomewhat ſtraw-coloured.

It is ſoft and ſmooth to the taſte; though after being agitated in the mouth, it leaves a ſmall degree of roughneſs on the tongue.

It throws up a ſcum variegated with ſeveral colours, which feels greaſy; and efferveſces with ſpirit of vitriol.

It mixes ſmooth with milk, but curdles with ſoap. When boiled it turns milky; a fourth part of mountain wine fines it immediately; and all acids do the ſame.

It operates chiefly by urine; though it is alſo ſomewhat purgative; and increaſes perſpiration.

It is in eſteem for removing glandular obſtructions. It is good in bloody fluxes, purgings, and the like. In diſorders of the ſtomach ariſing from acidity; in the gravel; fluor albus; and immoderate flux of the menſes.

As a diuretic it is good in dropſical complaints.

It gently warms the ſtomach; ſtrengthens the appetite; and promotes digeſtion. It is alſo of ſervice in lowneſs of ſpirits. From its efficacy in removing obſtructions of the glands, it is recommended in ſcurvies and cutaneous diſeaſes; and its virtues in theſe complaints ſeem to be confirmed by the tingling which it occaſions in the ſkin.

The doſe is uſually a quart in a day.

The water is ſuppoſed to owe its virtues to a native alkaline ſalt, which may be obtained from it by evaporation, and to its *fixed air*.

TOBER BONY,

In Ireland.

This ſpring is ſituated about four miles north of Dublin.

The water is ſweet, and ſoon lathers with ſoap.

Before rain and wind it yields a fetid ſmell. Its ſediment, when placed on hot iron, turns black and fetid.

It contains an alkaline ſalt, together with a calcareous earth, and an oily or bituminous matter.

Its virtues are ſimilar to thoſe of the *Tilbury* water, but in a leſs degree.

TONSTEIN.

In the Biſhoprick of Cologne, Germany.

This is among the moſt noted waters of Germany.

The water has a briſk ſubacid taſte, at the fountain, which is loſt by expoſure to the air.

It is clear and limpid when taken up from the well, but becomes turbid by ſtanding; owing to the loſs of its fixed air.

It contains an alkaline ſalt, together with a little chalky earth, and ſea ſalt.

Its virtues are ſimilar to thoſe of the *Seltzer* waters, but it is more purgative.

It may alſo be uſed with advantage for common drink, either by itſelf or mixed with wine; and that either in acute or chronic diſeaſes, where diuretic or deobſtruent remedies are required.

TOWNLEY,

See *Hanbridge*.

TRALEE,

In the county of Kerry, Ireland.

It is a chalybeate water, of the nature of that of *Caſtleconnel*.

TUNBRIDGE.

The WELLS *are ſituated about five miles from the town of Tunbridge, in Kent.*

This is at preſent one of the moſt famous chalybeate waters in England, and the moſt reſorted to of any, though it does not ſeem to be preferable to many others in this kingdom.

It is a briſk, light water, has a ferruginous taſte, and contains alſo a little ſea ſalt.

Expoſed to the air it ſoon loſes its virtues; as it does alſo in a few days in bottles.

It is uſual at times to mix with the firſt glaſs of the water, taken in the morning, either a little common ſalt, or ſome other purging ſalt, in order to make it operate by ſtool. If the ſtomach be foul, it is apt to vomit.

It is chiefly reſorted to in June, July, and Auguſt; and is recommended in all thoſe diſorders in which the celebrated *Spaw waters of Germany* are ſerviceable. It poſſeſſes the ſame general virtues as thoſe waters, but in a leſs degree.

UPMINSTER,

Near Brentwood, in Eſſex.

This is a ſtrong ſulphureous water, impregnated with a purging ſalt, and the foſſil alkali.

It is purgative and diuretic; and in its virtues ſeems to reſemble the *Aſkeron* water.

VAHLS,

In France.

The well is near Vahls, in Dauphiny.

The water has a briſk ſubacid taſte at the ſpring; which is loſt before it reaches Paris, for it then taſtes ſaltiſh.

It contains the foſſil alkali.

It is diuretic, and ſomewhat purgative; and is ſimilar in virtues to the *Seltzer* and *Clifton* waters, though leſs powerful.

N. B. Near to this is another ſpring, called *La Marie*, but weaker.

WARDREW,

In Northumberland.

It is ſituated between Cumberland and Northumberland, on the banks of the river Arden.

It is the moſt cold ſulphureous water in the three northern counties. It contains alſo ſea ſalt, and therefore reſembles in virtues the *Harrogate* water.

It loſes both its ſmell and virtues by carriage and keeping.

WEATHERSTACK,

In Weſtmoreland.

This is a weak chalybeate water, but contains a large portion of ſea ſalt. In the ſummer it ſmells of ſulphur, but not in the winter.

It is purgative; and the doſe is two or three pints.

WELLENBROW,

In Northamptonſhire.

It is a light chalybeate water, reſembling that of *Iſlington.*

WEST ASHTON,

In the pariſh of Steeple Aſhton, Wiltſhire.

It is a weak chalybeate water, reſembling thoſe of *Iſlington* and *Tunbridge.*

WESTWOOD,

Near Tanderſley, in Derbyſhire

This is a vitriolic chalybeate, ſomewhat reſembling the *Shadwell* water.

It is recommended externally for old ſores in the legs.

N. B. The coal waters, in general, in this part of the country, are alſo vitriolic.

WEXFORD,

In Ireland.

It is an agreeable chalybeate water, ſimilar in virtue to that of *Iſlington.*

WHITE-ACRE,

Near Trales, in Lancaſhire.

This is a very clear, briſk chalybeate water, reſembling that of *Lancaſter* in virtues, but it is ſaid rather to bind than purge.

WIGAN,

In Lancaſhire.

It is a clear chalybeate water, reſembling thoſe of *Hampſtead* and *Iſlington.*

WIGGLESWORTH,

In the pariſh of Long Preſton, in the Weſt Riding of Yorkſhire, four miles South of Settle.

The water is very black, and has a ſtrong ſulphureous ſmell, with a ſaltiſh taſte.

Drank to the quantity of three quarts, it purges, and two quarts are ſaid to vomit, though it is rather uncommon, that more ſhould be required for the latter than the former.

WILDUNGAN,

In the country of Waldeck, Germany.

This water at the fountain, has a briſk ſubacid taſte, which it loſes by expoſure.

It is of the ſame kind with that of *Buch*, but weaker.

It is one of the mildeſt acidulæ known, and may be uſed as common drink alone, or mixed with a ſmall portion of wine.

Though it is not eſteemed ſtrong enough to remove obſtinate chronic diſeaſes, and clear the firſt paſſages, yet it is excellent for blunting and dilating acrid, ſcorbutic, and gouty humours, when taken in large quantity, and for a ſufficient length of time.

WITHAM,

In Eſſex,

This is a chalybeate water of conſiderable ſtrength, and is alſo impregnated with ſea ſalt, but it will not bear carriage, and muſt be drank at the fountain.

It is very diuretic, and has been ſucceſsfully preſcribed in hectic fevers, in weakneſs occaſioned by long diſeaſe, in lowneſs of ſpirits, nervous complaints, want of appetite, indigeſtion, habitual cholic, and vomiting; in agues, in the jaundice, and beginning dropſy; in the gravel, and in aſthmatic and ſcorbutic diſorders.

WIRKSWORTH,

In Derbyſhire.

It is a weak ſulphureous water, impregnated with a purging ſalt, and is alſo chalybeate.

It is recommended in ſcrophulous, and cutaneous diſorders.

ZAHOROVICE,

In Germany.

The ſpring is near to this village, in the diſtrict of the Caſtle of Suietlovia, in a rocky valley, by the ſide of the river Nezdenice.

It is an acidulous water, ſalter, but leſs acid than that of *Nezdenice*; and it is alſo ſomewhat pungent and fœtid.

It is in great eſteem in the neighbourhood, particularly for the cure of ſcrophulous diſorders.

CONCLUSION.

FOR the ſake of brevity, I have omitted a particular deſcription of each water in the preceding account, and occaſionally referred the reader to ſome water of the ſame kind which has been more fully treated of; and the general virtues of the different claſſes of waters are alſo deſcribed at large in the Introduction.

In the Appendix to Dr. Prieſtley's tract, I have given directions for imitating ſome of thoſe waters. The acidulous waters of the 5th claſs, for example, may be imitated, and even excelled, by ſimply impregnating water with *Fixed Air*. The ſolid ingredients are known to be of little or no conſequence. If, however, theſe are deſired, they may be added in the proportions directed under the article *Seltzer water*; though it is by no means neceſſary that thoſe proportions ſhould be ſtrictly adhered to.

A Purging water, anſwering perhaps all the intentions of thoſe of the 6th claſs, may be made as directed for the *Seidſcutz water*.

Rochelle or Glauber's ſalt may be ſubſtituted for the Epſom, if the latter be too nauſeous; and a little common ſalt may alſo be added. If the water to be imitated be a ſalt water, like that of the ſea, the common ſalt ſhould be in the greater proportion.

The chalybeate waters of the 1ſt claſs may be elegantly ſubſtituted, by water impregnated with Fixed Air, in which iron-filings, or wire, has been infuſed: or they may be made as directed under the articles *Spaw* and *Pyrmont water*. The chalybeate purging waters of the 2d claſs may be imitated by adding to a gallon of this water two or three ounces of Epſom, or other purging ſalt, and, if you will, a little ſea ſalt.

For the ſulphureous waters of the 3d claſs water impregnated with ſulphureous air may be advantageouſly uſed: or they may be made as directed under the article *Aix-la-Chapelle water*. If they are alſo required to be chalybeate, or purging, or both, iron-filings, or Epſom ſalt, or both theſe may be added, together with a little ſea ſalt, according to circumſtances. For cold ſulphureous waters both fixed and ſulphureous airs are to be employed; as mentioned in the Appendix;

and even for the hot ſulphureous waters it may be proper to put a ſmall proportion of chalk with the liver of ſulphur into the lower veſſel A of the apparatus.

They who have a knowledge of natural philoſophy, will perceive that theſe artificial waters are not only equal, but even ſuperior to the natural ones, eſpecially when they cannot be drank at the ſpring head. Their virtues, for the moſt part, depend on their *volatile* principles, and art can make water imbibe more than double the quantity of fixed, or ſulphureous air, that the ſtrongeſt natural waters are ever found to contain. The latter are alſo frequently impregnated with hurtful or, at leaſt, uſeleſs ingredients; and we cannot always be ſure that we have them genuine. It is not, however, by any means, the Author's wiſh to proſcribe the uſe of the natural waters. Many of them have particular virtues, as has been proved by undoubted experiments: and there are others which art cannot yet ſufficiently imitate.

Many people again, through prejudice, will not uſe the artificial waters, as they do not believe it poſſible that they can be made ſufficiently to reſemble the natural ones; but even thoſe will not object to the uſe of water impregnated with *fixed* or *ſulphureous air* in a *medicinal* view.

Water impregnated with fixed air is now known to be a very powerful antiſeptic, or corrector of putrifaction. It will preſerve fleſh kept in it ſweet, and even reſtore it after it becomes putrid. It is therefore given with great ſucceſs in putrid fevers, in the ſea ſcurvy, in dyſenteries, in mortifications, and in other diſorders ariſing from a putrid cauſe, or attended with putrifaction, a draught of it being taken now-and-then, or even by way of common drink. But the ingenious Mr. Bewly has invented a ſtill better method of exhibiting fixed air, as a medicine: he directs a ſcruple of alkaline ſalt to be diſſolved in a ſufficient quantity (ſuppoſe a quarter of a pint, or leſs) of water, which is to be impregnated with as much fixed air as it can imbibe; this is to be drank for one doſe. ‡ If immediately after it a ſpoonful of lemon juice, mixed with two or three ſpoonfuls of water, and ſweetened with ſugar, be drank, the fixed air will be extricated in the ſtomach; and by this means a much greater quantity of it may be given than the ſame quantity of water alone can be made to imbibe. In this way I have given it in the above diſorders, as well as in thoſe that follow, with the beſt effect.

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‡ Mr. Bewly directs it to be prepared in larger quantity at a time, (as indeed it ought, in order to ſave trouble) and calls it his *Mephitic Julep*.

Fixed air acts as a corroborant; and therefore may be given with ſucceſs in weakneſs of the ſtomach, and in vomitings ariſing from that cauſe.

It has already been noticed, in the Introduction, that if mild calcareous earth be ſuperſaturated with fixed air, it becomes ſoluble in water. The calculus, or ſtone in the bladder, conſiſts partly of this earth. Fixed air therefore has been given as a *ſolvent* in this caſe with ſucceſs.

When the lungs are purulent, fixed air mixed with the air drawn into the lungs, has repeatedly been found to perform a cure.

The bark may be given with advantage in water impregnated with fixed air, as they both coincide in the ſame intention.

Fixed air may be applied by means of a ſyringe, or otherwiſe, to putrid ulcers, mortified parts, ulcerated ſore throats, and in ſimilar caſes, and it has been found to have remarkable efficacy. It may alſo be given internally at the ſame time.

In putrid dyſenteries, and in putrid ſtools, fixed air may be given by way of clyſter, as hath been obſerved by the learned and ingenious Dr. Prieſtley (whom I have the honour to call my friend) in the former part of this work. Fermenting cataplaſms are of ſervice chiefly as they ſupply fixed air to the part.

In caſes of putridity, fixed air has been ſucceſsfully applied to the ſurface of the body, expoſed to ſtreams of it. And there are other caſes in which it has been found ſerviceable. It is alſo an excellent cooling as well as ſtrengthening beverage in hot relaxing weather, and it has beſides the advantage of being pleaſant taſted.

The virtues of water impregnated with *ſulphureous air* may be collected from what was ſaid in the Introduction, concerning ſulphureous waters.

FINIS.

SYNOPSIS

OF THE

Medicinal Contents of the Moſt Noted Mineral Waters, analyſed by Dr. *Higgins* at the Inſtance of *John Elliſon.*

TILBURY ALTERATIVE WATER,

AT

West Tilbury-Hall.

THE Water at Weſt Tilbury-Hall, which I ſealed at the Well on the 22d of *September*, 1779, contains in each Wincheſter Gallon

	dwt.	*gr.*
Of calcareous earth ſaturated with acidulous gas	1	13
Of true nitre with baſis of fixed vegetable alkali	2	1
Of ſea ſalt	3	10
Of mineral alkali	0	1½
Of mineral oleaginous matter by eſtimation	0	1¼
	7	2¾

Two quarts of acidulous gas, which in denſity, to temperate atmoſpheric air, is nearly as two to one, are contained in each gallon of this water, beyond the quantity of acidulous gas retained by the calcareous earth in the heat of boiling water.

Greek-Street, *Soho*, Oct. 11, 1779. *BRYAN HIGGINS.*

BRISTOL HOT-WELL WATER.

A Wincheſter gallon of Briſtol Water contains

	dwt.	*gr.*
Of calcareous earth combined with vitriolic acid in the form of ſelenite	0	8½
Of calcareous earth combined with acidulous gas	0	12¾
Of marine ſalt of magneſia	0	5¼
Of ſea ſalt	0	6½
	1	9

It moreover contains 8 ounce meaſures of acidulous gas, beyond the quantity retained by the calcareous earth in the heat of boiling water; and 2 ounce meaſures of air, equal, if not ſuperior to atmoſpheric air, in purity.

HARROGATE WATER.

A Wincheſter gallon of Harrogate Water contains	*oz.*	*dwt.*	*gr.*
Of calcareous earth ſaturated with acidulous gas	0	1	$12\frac{1}{4}$
Marine ſalt of magneſia	0	4	$23\frac{1}{4}$
Sea ſalt	1	7	$12\frac{1}{2}$
	1	14	—

It moreover contains 4 ounce meaſures of acidulous gas, beyond the quantity retained by the calcareous earth in the heat of boiling water; and 35 ounce meaſures of fœtid inflammable gas, ſuch as may be extricated from calcareous liver of ſulphur by vitriolic acid.

BATH WATER.

A Wincheſter gallon of Bath Water contains	*dwt.*	*gr.*
Of calcareous earth combined with vitriolic acid in the form of ſelenite	3	$19\frac{9}{10}$
Of calcareous earth combined with acidulous gas	0	$22\frac{3}{10}$
Of marine ſalt of magneſia	0	$22\frac{2}{10}$
Of ſea ſalt	1	$14\frac{4}{10}$
Of iron combined with acidulous gas	0	$0\frac{1}{10}$
	7	$8\frac{1}{10}$

It moreover contains 12 ounce meaſures of acidulous gas, beyond the quantity retained by the calcareous earth and iron in the heat of boiling water, and 2 ounce meaſures of atmoſpheric air.

SCARBOROUGH WATER.

A Wincheſter gallon of Scarborough Water contains	*dwt.*	*gr.*
Of calcareous earth ſaturated with vitriolic acid in the form of ſelenite	2	$14\frac{1}{2}$
Of calcareous earth combined with acidulous gas	2	4
Marine ſalt of magneſia	7	$4\frac{3}{4}$
Iron combined with acidulous gas	0	$2\frac{1}{2}$
	12	$1\frac{3}{4}$

It likewiſe contains 96 ounce meaſures of acidulous gas, beyond the quantity retainable by the calcareous earth and iron in the heat of boiling water; and 4 ounce meaſures of phlogiſticated air.

Reported *May* 31, 1780. *BRYAN HIGGINS.*

German Spa Waters, from three different Springs, viz.

Pohoun, Sauveniere, and Chevron or Bru.

Pohoun is ſituated in the middle of the village of Spa; Sauveniere a mile and a half diſtant from it; and Chevron or Bru about three miles from Spa.

Dr. *Higgins* has made the following report on theſe Waters.

POHOUN WATER.

A Wincheſter Gallon of Pohoun Water contains	*dwt.*	*gr.*
Of calcareous earth combined with acidulous gas	0	12
Of magneſia combined with acidulous gas	0	$17\frac{2}{10}$
Of mild mineral alkali weighed in the cryſtalline form	0	$16\frac{8}{10}$
Of iron combined with acidulous gas	0	$3\frac{5}{10}$
Of ſea ſalt	0	$7\frac{8}{10}$
Of mineral oleaginous matter	0	$0\frac{1}{10}$
	2	$9\frac{4}{10}$

It likewiſe contains 132 ounce meaſures of acidulous gas, excluſive of the quantity retained in the calcareous earth, magneſia, mineral alkali and iron in the heat of boiling water; and $3\frac{1}{2}$ ounce meaſures of atmoſpheric air.

CHEVRON or BRU WATER.

A Wincheſter gallon of Chevron or Bru Water contains	*gr.*
Of calcareous earth combined with acidulous gas	$6\frac{1}{2}$
Of magneſia combined with acidulous gas	$7\frac{1}{2}$
Of iron combined with acidulous gas	3
Of mild mineral alkali weighed in the cryſtalline form	$\frac{1}{2}$
	1 $7\frac{1}{2}$

It moreover contains 124 ounce meaſures of acidulous gas, beyond the quantity retained by the calcareous earth, magneſia, iron and mineral alkali in the heat of boiling water; and $1\frac{1}{2}$ ounce meaſure of atmoſpheric air.

SAUVENIERE WATER.

A Wincheſter gallon of Sauveniere Water contains	*gr.*
Of calcareous earth combined with acidulous gas	$6\frac{10}{100}$
Of magneſia combind with acidulous gas	$4\frac{50}{100}$
Of iron combined with acidulous gas	$2\frac{20}{100}$
Of mild mineral alkali weighed in the cryſtalline form	$1\frac{90}{100}$
Of ſea ſalt	$\frac{60}{100}$
Of mineral oleaginous matter	$\frac{1}{100}$
	$15\frac{31}{100}$

It likewiſe contains 108 ounce meaſures of acidulous gas, excluſive of the quantity retained in the calcareous earth, magneſia, mineral alkali and iron in the heat of boiling water; and $1\frac{1}{2}$ ounce meaſure of atmoſpheric air.

Reported, *June* 30, 1780. *BRYAN HIGGINS.*

PYRMONT WATER.

A Wincheſter gallon of Pyrmont Water contains	*dwt.*	*gr.*
Of calcareous earth combined with vitriolic acid in the form of ſelenite	2	$13\frac{2}{10}$
Of calcareous earth combined with acidulous gas	1	22
Of magneſia combined with acidulous gas	0	$15\frac{6}{10}$
Of iron combined with acidulous gas	0	$2\frac{6}{10}$
Of magneſia combined with vitriolic acid, or of bitter cathartic ſalt P. L.	1	$6\frac{7}{10}$
Of ſea ſalt	0	$10\frac{1}{10}$
	6	$22\frac{2}{10}$

It likewiſe contains 192 ounce meaſures of acidulous gas, excluſive of the quantity retained in the heat of boiling water, by the calcareous earth, magneſia and iron; and one ounce meaſure of atmoſpheric air.

SELTZER WATER.

A Wincheſter gallon of Seltzer Water contains	*dwt.*	*gr.*
Of calcareous earth combined with acidulous gas	0	14
Of magneſia combined with acidulous gas	0	$20\frac{5}{10}$
Of mineral alkali weighed in the cryſtalline form	5	$21\frac{6}{10}$
Of ſea ſalt	3	$20\frac{2}{10}$
Of mineral oleaginous matter	0	$0\frac{2}{10}$
	11	$4\frac{5}{10}$

It likewiſe contains 128 ounce meaſures of acidulous gas, excluſive of the quantity retained in the heat of boiling water by the calcareous earth, magneſia and mineral alkali; and 3½ ounce meaſures of atmoſpheric air.
Reported, *July* 1, 1780. *BRYAN HIGGINS.*

NEVIL HOLT WATER.

A Wincheſter gallon of Nevil Holt Water contains	*dwt.*	*gr.*
Of ſelenite ſalt	4	12½
Of bitter cathartic ſalt	5	0¼
Of marine argillaceous ſalt	5	18¼
Of marine ſalt of magneſia	0	18
	16	1

It moreover contains 12 ounce meaſures of acidulous gas, and two of atmoſpheric air.
Reported, *Auguſt* 22, 1780. *BRYAN HIGGINS.*

DRIBURG WATER.

This Water, which has the higheſt reputation abroad, ſprings in a pleaſant plain, about half a mile from the Town of Driburg in Weſtphalia. Dr. *Higgins* has made the following report on it.

A Wincheſter Gallon of Driburg Water contains	*dwt.*	*gr.*
Of calcareous earth combined with vitriolic acid in the form of ſelenite	3	2
Of calcareous earth combined with acidulous gas	2	16½
Of magneſia combined with acidulous gas	0	11¾
Of magneſia combined with vitriolic acid, or bitter cathartic ſalt	1	12
Of marine ſalt of magneſia	0	9¾
Of iron combined with acidulous gas	0	2¾
Of ſea ſalt	0	2
	8	18¾

It moreover contains 208 ounce meaſures of acidulous gas, excluſive of the quantity retained in the heat of boiling water by the calcareous earth magneſia and iron; and 4 ounce meaſures of atmoſpheric air.
Reported, *Auguſt* 22, 1780. *BRYAN HIGGINS.*

Note. The elaſtic fluids were meaſured in temperate air, under the mean preſſure of the atmoſphere.

Proper teſtimonials of theſe Waters being in the higheſt perfection at the time of filling and of the analyſis, are ready to be produced by Mr. *Elliſon*; who hopes that his having been thus inſtrumental in aſcertaining the real contents, and conſequently the true medicinal virtues of the moſt uſeful mineral waters, will recommend him to the patronage of medical gentlemen, and the favour of the publick.

The celebrated Water of Jeſſop's Well, the Tilbury Alterative Water, at Weſt Tilbury Hall, of both which Mr. Elliſon is ſole Proprietor, and all the Foreign, and Engliſh Mineral Waters, continue to be ſold in the higheſt Perfection, by *John Elliſon*, at his Mineral Water Warehouſe, St. Albans Street, Pall Mall, and at his Warehouſe, near Red Lion Street, Whitechapel.

Seltzer Water

Dr Hoffman found by evaporating ye two pints that it contained two scruples of a pure alcaline Salt. Dr Rutty found it contained a small quantity of sea Salt.

Dr Willm Irvin analysed Seltzer Water & gave the following receipt for making it.

℞ Aq. Distill. ℔ viij
Sal. Comm. ʒiſs
Alkal. Fossil. sicc. ʒii
Mag. Alb. ℈i
Cret. alb. grxiv M. et gradat. adde
Aer. fixi q. s.

Aq. Distill.	Sal. Com.	Alk. f.	M. A.	C. A.
℔ viij	ʒiſs	ʒij	℈j	grxiv
℔ iv	grxlv	ʒi	grx	gr vij
℔ ii	grxxiiſs	ʒſs	grv	gr. iiiſs
℔ j	grxi½	grxv	griiſs	gr1¾

For Pyrmont Water by Do

℞ Aq. Distillat. ℔ viij
Sal. Commun. gr x
— Cathar. amar. ʒſs
Cret. Vitriolat. ℈ij
Cret. Alb. ʒi
Mag. Alb. gr xvj
Limat. Mart. gr. iiſs M.
cui adde Aeris Fixi q. s.

[illegible] 74.236

To render the artificial water like to Pyrmont, Sir John Pringle says, there may be added to each pint from eight to ten drops of tinctura martis cum spiritu salis. But the method of rendering them chalybeate used by Dr Hulme, is to add one grain of salt of steel to each pint (16 ounces) of water already impregnated with fixed air.